

BLAST OFF to 6th Grade Math

5th to 6th Grade Transition Math Workbook

ANSWER KEY

Thank you for downloading! This is the answer key to accompany the workbook **Blast off to 6th Grade Math**. We hope this will be a great resource for your child to reinforce 5th grade math and build the skills needed for success in 6th grade.

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6

Place Value

Write the value of the underlined digit in each number.

- ① 6,093,215 90,000 ② 4,728,016 700,000
 ③ 8,301,479 8,000,000 ④ 1,924,436 4,000
 ⑤ 2,503,175 5 ⑥ 785,932 700,000
 ⑦ 9,748,619 10 ⑧ 563,074 60,000
 ⑨ 93,856 3,000 ⑩ 3,091,287 200

Circle the number in each pair in which the digit 8 has a **greater** value.

- ⑪ 10,298 ⑫ 8,245 ⑬ 2,816,492 ⑭ 7,982,563
 ⑮ 465,892 ⑯ 392,087 ⑰ 5,238,175 ⑱ 5,285,731
 ⑲ 63,508 ⑳ 55,681 ㉑ 8,347,126 ㉒ 876,072

Fill in the blanks with the correct numbers.

- ⑲ In 7,298,564, the digit 2 is in the hundred thousands place.
 ⑳ In 6,581,047, the digit 6 is in the millions place.
 ㉑ In 4,921,068, the digit 2 is in the ten thousands place.
 ㉒ In 8,397,450, the digit 4 is in the hundreds place.

8

Place Value

Write each number in both standard and expanded form.

- EX Two million, four hundred thirty-five thousand, two hundred ten
Standard form: 2,435,210
Expanded form: 2,000,000 + 400,000 + 30,000 + 5,000 + 200 + 10
- ① One million, two hundred thirteen thousand, four hundred fifteen
Standard form: 1,213,415
Expanded form: 1,000,000 + 200,000 + 10,000 + 3,000 + 400 + 10 + 5
- ② Nine hundred fifty-seven thousand, six hundred forty-eight
Standard form: 957,648
Expanded form: 900,000 + 50,000 + 7,000 + 600 + 40 + 8
- ③ Six million, twenty-three thousand, five hundred eighty-seven
Standard form: 6,023,587
Expanded form: 6,000,000 + 20,000 + 3,000 + 500 + 80 + 7

Place Value

7

Fill in the correct bubble to answer each question.

- ① Which of these numbers has an even digit in the tens place?
 865,735 641,023 547,892
- ② Which of these numbers has a thousands digit greater than 4?
 1,025,981 5,941,630 6,084,273
- ③ Which of these numbers has a zero in the ten thousands place?
 1,080,760 8,920,003 7,200,406
- ④ Which of these numbers has a digit whose value is 300,000?
 3,456,207 4,315,980 2,637,941
- ⑤ Which of these numbers has an odd digit in the millions place?
 3,489,127 2,187,095 4,183,647
- ⑥ Which of these numbers has a ten thousands digit less than 5?
 9,761,548 549,032 72,381

8

Place Value

Write each number in both standard and expanded form.

- EX 6 thousands = 60 hundreds
 = 600 tens
- ① 5 ten thousands = 500 hundreds
 = 5,000 tens
- ② 7 hundreds = 70 tens
 = 700 ones
- ③ 2 hundred thousands = 200 thousands
 = 200,000 ones
- ④ 4 millions = 40 hundred thousands
 = 400,000 tens
- ⑤ 9,000 ones = 9 thousands
 = 900 tens
- ⑥ 30 tens = 3 hundreds
 = 300 ones

Place Value

9

Fill in the blanks with the correct numbers.

Fill in the chart to round each number to the given place value.

3,157,624	
Ten	3,157,620
Hundred	3,157,600
Thousand	3,158,000
Ten Thousand	3,160,000
Hundred Thousand	3,200,000
Million	3,000,000

2,683,057	
Ten	2,683,060
Hundred	2,683,100
Thousand	2,683,000
Ten Thousand	2,680,000
Hundred Thousand	2,700,000
Million	3,000,000

4,394,248	
Ten	4,394,250
Hundred	4,394,200
Thousand	4,394,000
Ten Thousand	4,390,000
Hundred Thousand	4,400,000
Million	4,000,000

6,285,103	
Ten	6,285,100
Hundred	6,285,100
Thousand	6,285,000
Ten Thousand	6,290,000
Hundred Thousand	6,300,000
Million	6,000,000

5,721,635	
Ten	5,721,640
Hundred	5,721,600
Thousand	5,722,000
Ten Thousand	5,720,000
Hundred Thousand	5,700,000
Million	6,000,000

8,164,652	
Ten	8,164,650
Hundred	8,164,700
Thousand	8,165,000
Ten Thousand	8,160,000
Hundred Thousand	8,200,000
Million	8,000,000

Write a whole number that fits each description. There will be more than one possible correct answer.

- ① A number that rounded to the nearest ten equals 8,760

Any number between 8,755 and 8,764

- ② A number that rounded to the nearest hundred equals 1,000

Any number between 950 and 1,049

- ③ An even number that rounded to the nearest ten equals 790

786, 788, 790, 792, or 794

- ④ An odd number that when rounded to the nearest ten equals 300

295, 297, 299, 301, or 303

- ⑤ A number that when rounded to the nearest hundred equals 18,500 and rounded to the nearest thousand equals 18,000

Any number between 18,450 and 18,499

Fill in the correct bubble to answer each question.

- ① The city of Springfield has a population of 113,394, and the surrounding suburbs have a population of 92,119. Which of these is the best estimate of the total population of Springfield and its suburbs?

20,000 120,000 200,000

- ② A dairy cow produces an average of 6 gallons of milk a day. Which is the best estimate of the number of gallons of milk that a farm with 287 dairy cows can expect to produce in a day?

1,800 8,000 12,000

- ③ 483 candies are divided into 8 bags. Which of these is the best estimate for the number of candies in each bag?

40 50 60

- ④ Roger is driving from New York to California, a trip that will be 2,794 miles long. On the first day, he drove 492 miles. Which of these is the best estimate for how many miles Roger has left on his trip?

2,000 2,300 3,300

Use the information below to answer the questions that follow.

Leslie and Charles are shopping for new living room furniture. The prices for some pieces of furniture they are considering are shown in the table at right.

Item	Price
Standard Sofa	\$1,529
Love Seat	\$1,209
Sectional Sofa	\$3,179
Recliner	\$499
Coffee Table	\$399

- ① Leslie wants to buy a standard sofa and a love seat. Charles wants to buy a sectional sofa instead. Leslie argues that it would be about \$700 less expensive to buy the standard sofa and love seat rather than the sectional. Is she correct? Explain.

She is not correct. The total cost of the standard sofa and love seat would be about \$2,700, which is about \$400 less than the sectional, not \$700.

- ② If Charles and Leslie purchased the standard sofa, love seat, recliner, and coffee table, what would be their approximate total cost (to the nearest hundred)?

\$3,600

Rewrite each expression as a power of ten.

EX) $10 \times 10 \times 10 = 10^3$

① $10 \times 10 \times 10 \times 10 \times 10 = 10^5$

② $10 \times 10 \times 10 \times 10 = 10^4$

③ $10 \times 10 = 10^2$

④ $10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^8$

⑤ $10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 = 10^{10}$

Rewrite each exponent as a multiplication expression.

EX) $10^3 = 10 \times 10 \times 10$

⑥ $10^7 = 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10$

⑦ $10^1 = 10$

⑧ $10^6 = 10 \times 10 \times 10 \times 10 \times 10 \times 10$

⑨ $10^9 = 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10$

⑩ $10^{12} = 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10 \times 10$

Evaluate each exponent.

EX) $10^4 = 10,000$

① $10^2 = 100$

② $10^3 = 1,000$

③ $10^6 = 1,000,000$

④ $10^7 = 10,000,000$

⑤ $10^1 = 10$

⑥ $10^8 = 100,000,000$

⑦ $10^5 = 100,000$

⑧ $10^{10} = 10,000,000,000$

⑨ $10^9 = 1,000,000,000$

Rewrite each number as a power of ten.

EX) $10,000 = 10^4$

⑩ $100,000 = 10^5$

⑪ $100,000,000 = 10^8$

⑫ $1,000 = 10^3$

⑬ $1,000,000,000 = 10^9$

⑭ $100 = 10^2$

⑮ $10 = 10^1$

⑯ $10,000,000 = 10^7$

⑰ $1,000,000 = 10^6$

⑱ $10,000,000,000 = 10^{10}$

Evaluate each expression.

EX) $3 \times 10^2 = 300$

① $5 \times 10^3 = 5,000$

② $6 \times 10^1 = 60$

③ $9 \times 10^4 = 90,000$

④ $2 \times 10^5 = 200,000$

⑤ $4 \times 10^6 = 4,000,000$

⑥ $12 \times 10^2 = 1,200$

⑦ $37 \times 10^3 = 37,000$

⑧ $21 \times 10^1 = 210$

⑨ $50 \times 10^4 = 500,000$

Complete each equation with the correct power of ten.

EX) $2,500 = 25 \times 10^2$

⑩ $30,000 = 3 \times 10^4$

⑪ $800 = 8 \times 10^2$

⑫ $970 = 97 \times 10^1$

⑬ $700,000 = 7 \times 10^5$

⑭ $11,000 = 11 \times 10^3$

⑮ $8,900,000 = 89 \times 10^5$

⑯ $60,000 = 60 \times 10^3$

⑰ $260,000 = 26 \times 10^4$

⑱ $400,000 = 4 \times 10^5$

Fill in the correct bubble to answer each question.

① Which of these is equivalent to 5×10^4 ?

5,000

50,000

500,000

② Which of these is equivalent to 63×10^3 ?

630

6,300

63,000

③ Which of these is equivalent to 70×10^2 ?

700

7,000

70,000

④ Which of these is equivalent to 870?

87×10^1

87×10^2

87×10^3

⑤ Which of these is equivalent to 6,000,000?

6×10^6

6×10^7

60×10^4

⑥ Which of these is equivalent to 350,000?

35×10^3

35×10^4

35×10^5

List all the factors of each number.

- ① 12: 1, 2, 3, 4, 6, 12
- ② 45: 1, 3, 5, 9, 15, 45
- ③ 60: 1, 2, 3, 4, 5, 12, 15, 20, 30, 60
- ④ 28: 1, 2, 4, 7, 14, 28
- ⑤ 39: 1, 3, 13, 39
- ⑥ 24: 1, 2, 3, 4, 6, 8, 12, 24

Color the factors of 36 red. Color the factors of 48 blue. If a number is a factor of both 36 and 48, color it purple.

1	2	3	4	5	6	7	8
9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24
25	26	27	28	29	30	31	32
33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48

Find the greatest common factor (GCF) of each pair of numbers.

- ① 36 and 56
Factors of 36: 1, 2, 3, 4, 6, 9, 12, 18, 36
Factors of 56: 1, 2, 4, 7, 8, 14, 28, 56
GCF of 36 and 56: 4
- ② 27 and 54
Factors of 27: 1, 3, 9, 27
Factors of 54: 1, 2, 3, 6, 9, 18, 27, 54
GCF of 27 and 54: 27
- ③ 45 and 81
Factors of 45: 1, 3, 5, 9, 15, 45
Factors of 81: 1, 3, 9, 27, 81
GCF of 45 and 81: 9
- ④ GCF of 26 and 64: 2
- ⑤ GCF of 42 and 54: 6
- ⑥ GCF of 75 and 90: 15
- ⑦ GCF of 18 and 72: 18

Color in all of the prime numbers on the hundreds chart below.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

- ① Explain how you know if a number is prime.
A prime number has only two factors-1 and itself.
- ② What is a non-prime number called? composite

Complete the factor tree to find the prime factorization of each number.

- EX
- ```

 graph TD
 20 --> 4
 20 --> 5
 4 --> 2
 4 --> 2

```
- Prime factorization of 20:  
 $2 \times 2 \times 5$
- ①
- ```

  graph TD
    18 --> 2
    18 --> 9
    9 --> 3
    9 --> 3
  
```
- Prime factorization of 18:
 $2 \times 3 \times 3$ (or 2×3^2)
- ②
- ```

 graph TD
 24 --> 4
 24 --> 6
 4 --> 2
 4 --> 2
 6 --> 2
 6 --> 3

```
- Prime factorization of 24:  
 $2 \times 2 \times 2 \times 3$  (or  $2^3 \times 3$ )
- ③
- ```

  graph TD
    36 --> 4
    36 --> 9
    4 --> 2
    4 --> 2
    9 --> 3
    9 --> 3
  
```
- Prime factorization of 36:
 $2 \times 2 \times 3 \times 3$ (or $2^2 \times 3^2$)
- ④
- ```

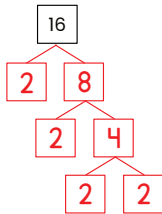
 graph TD
 27 --> 3
 27 --> 9
 9 --> 3
 9 --> 3

```
- Prime factorization of 27:  
 $3 \times 3 \times 3$  (or  $3^3$ )
- ⑤
- ```

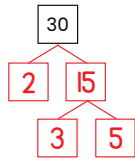
  graph TD
    54 --> 6
    54 --> 9
    6 --> 2
    6 --> 3
    9 --> 3
    9 --> 3
  
```
- Prime factorization of 54:
 $2 \times 3 \times 3 \times 3$ (or 2×3^3)

Draw a factor tree to find the prime factorization of each number.

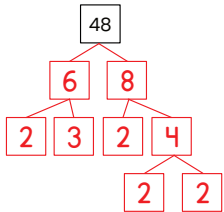
****Note: Factor trees may vary, but the prime factorization should be the same.****



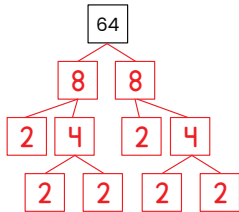
Prime factorization of 16:
 $2 \times 2 \times 2 \times 2$ (or 2^4)



Prime factorization of 30:
 $2 \times 3 \times 5$



Prime factorization of 48:
 $2 \times 2 \times 2 \times 2 \times 3$ (or $2^4 \times 3$)



Prime factorization of 64:
 $2 \times 2 \times 2 \times 2 \times 2 \times 2$ (or 2^6)

List the first five multiples of each number given.

- ① 6: 6, 12, 18, 24, 30
- ② 12: 12, 24, 36, 48, 60
- ③ 7: 7, 14, 21, 28, 35
- ④ 11: 11, 22, 33, 44, 55
- ⑤ 20: 20, 40, 60, 80, 100
- ⑥ 15: 15, 30, 45, 60, 75

Color the multiples of 3 red. Color the multiples of 4 blue. If a number is a multiple of both 3 and 4, color it purple.

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50

Find the least common multiple (LCM) of each pair of numbers.

- ① 6 and 14
Multiples of 6: 6, 12, 18, 24, 30, 36, 42...
Multiples of 14: 14, 28, 42...
LCM of 6 and 14: 42
- ② 10 and 12
Multiples of 10: 10, 20, 30, 40, 50, 60...
Multiples of 12: 12, 24, 36, 48, 60...
LCM of 10 and 12: 60
- ③ 8 and 10
Multiples of 8: 8, 16, 24, 32, 40...
Multiples of 10: 10, 20, 30, 40...
LCM of 8 and 10: 40
- ④ LCM of 8 and 15: 120 ⑤ LCM of 9 and 12: 36
- ⑥ LCM of 6 and 16: 48 ⑦ LCM of 4 and 6: 12

Find the number that answers each riddle and write it in the box.

- ① I am an even number that is not composite.
What number am I? 2
- ② My prime factorization is $2 \times 3 \times 3 \times 5$.
What number am I? 90
- ③ I am a prime number between 20 and 30.
My digits add up to a prime number greater than 10.
What number am I? 29
- ④ I am a composite number between 30 and 40.
All of my factors are even except 1.
What number am I? 32
- ⑤ I am a two-digit number less than 20.
My LCM with 8 is 56.
What number am I? 14

Next to each equation, write the multiplication property being shown: **associative, commutative, distributive, identity, or zero.**

- ① $21 \times 7 = 7 \times 21$ commutative
- ② $371 \times 1 = 371$ identity
- ③ $(14 \times 6) \times 5 = 14 \times (6 \times 5)$ associative
- ④ $89 \times 0 = 0$ zero
- ⑤ $5 \times (8 + 9) = (5 \times 8) + (5 \times 9)$ distributive

Draw an area model to find each product.

EX $362 \times 4 = 1,448$

	300	60	2
4	1,200	240	8

$1,200 + 240 + 8 = 1,448$

⑥ $981 \times 3 = 2,943$

	900	80	1
3	2,700	240	3

$2,700 + 240 + 3 = 2,943$

⑦ $79 \times 8 = 632$

	70	9
8	560	72

$560 + 72 = 632$

⑧ $1,427 \times 5 = 7,135$

	1,000	400	20	7
5	5,000	2,000	100	35

$5,000 + 2,000 + 100 + 35 = 7,135$

Use the distributive property to find each product.

- EX $98 \times 3 = (90 \times 3) + (8 \times 3) = 270 + 24 = 294$
- ① $47 \times 6 = (40 \times 6) + (7 \times 6) = 240 + 42 = 282$
- ② $62 \times 8 = (60 \times 8) + (2 \times 8) = 480 + 16 = 496$
- ③ $113 \times 4 = (100 \times 4) + (10 \times 4) + (3 \times 4) = 400 + 40 + 12 = 452$
- ④ $703 \times 2 = (700 \times 2) + (3 \times 2) = 1,400 + 6 = 1,406$
- ⑤ $398 \times 7 = (300 \times 7) + (90 \times 7) + (8 \times 7) = 2,100 + 630 + 56 = 2,786$

Find each product using the standard algorithm.

$\begin{array}{r} 42 \\ \times 6 \\ \hline 252 \end{array}$	$\begin{array}{r} 87 \\ \times 2 \\ \hline 174 \end{array}$	$\begin{array}{r} 53 \\ \times 9 \\ \hline 477 \end{array}$	$\begin{array}{r} 98 \\ \times 7 \\ \hline 686 \end{array}$	$\begin{array}{r} 35 \\ \times 4 \\ \hline 140 \end{array}$
$\begin{array}{r} 175 \\ \times 3 \\ \hline 525 \end{array}$	$\begin{array}{r} 436 \\ \times 8 \\ \hline 3,488 \end{array}$	$\begin{array}{r} 690 \\ \times 2 \\ \hline 1,380 \end{array}$	$\begin{array}{r} 502 \\ \times 6 \\ \hline 3,012 \end{array}$	$\begin{array}{r} 214 \\ \times 5 \\ \hline 1,070 \end{array}$
$\begin{array}{r} 2,841 \\ \times 4 \\ \hline 11,364 \end{array}$	$\begin{array}{r} 6,734 \\ \times 7 \\ \hline 47,138 \end{array}$	$\begin{array}{r} 8,315 \\ \times 9 \\ \hline 74,835 \end{array}$	$\begin{array}{r} 7,089 \\ \times 5 \\ \hline 35,445 \end{array}$	$\begin{array}{r} 3,856 \\ \times 3 \\ \hline 11,568 \end{array}$

Find each product using the standard algorithm.

$\begin{array}{r} 52 \\ \times 63 \\ \hline 156 \\ +3,120 \\ \hline 3,276 \end{array}$	$\begin{array}{r} 84 \\ \times 21 \\ \hline 84 \\ +1,680 \\ \hline 1,764 \end{array}$	$\begin{array}{r} 19 \\ \times 54 \\ \hline 76 \\ +950 \\ \hline 1,026 \end{array}$	$\begin{array}{r} 36 \\ \times 90 \\ \hline 0 \\ +3,240 \\ \hline 3,240 \end{array}$	$\begin{array}{r} 70 \\ \times 78 \\ \hline 560 \\ +4,900 \\ \hline 5,460 \end{array}$
$\begin{array}{r} 132 \\ \times 67 \\ \hline 924 \\ +7,920 \\ \hline 8,844 \end{array}$	$\begin{array}{r} 405 \\ \times 98 \\ \hline 3,240 \\ +36,450 \\ \hline 39,690 \end{array}$	$\begin{array}{r} 716 \\ \times 20 \\ \hline 0 \\ +14,320 \\ \hline 14,320 \end{array}$	$\begin{array}{r} 289 \\ \times 31 \\ \hline 289 \\ +8,670 \\ \hline 8,959 \end{array}$	$\begin{array}{r} 354 \\ \times 45 \\ \hline 1,770 \\ +14,160 \\ \hline 15,930 \end{array}$
$\begin{array}{r} 6,787 \\ \times 61 \\ \hline 6,787 \\ +407,220 \\ \hline 414,007 \end{array}$	$\begin{array}{r} 9,803 \\ \times 27 \\ \hline 68,621 \\ +196,060 \\ \hline 264,681 \end{array}$	$\begin{array}{r} 1,942 \\ \times 83 \\ \hline 5,826 \\ +155,360 \\ \hline 161,186 \end{array}$	$\begin{array}{r} 3,054 \\ \times 49 \\ \hline 27,486 \\ +122,160 \\ \hline 149,646 \end{array}$	$\begin{array}{r} 5,162 \\ \times 50 \\ \hline 0 \\ +258,100 \\ \hline 258,100 \end{array}$
$\begin{array}{r} 678 \\ \times 12 \\ \hline 1,356 \\ +6,780 \\ \hline 8,136 \end{array}$	$\begin{array}{r} 90 \\ \times 43 \\ \hline 270 \\ +3,600 \\ \hline 3,870 \end{array}$	$\begin{array}{r} 5,169 \\ \times 65 \\ \hline 25,845 \\ +310,140 \\ \hline 335,985 \end{array}$	$\begin{array}{r} 273 \\ \times 97 \\ \hline 1,911 \\ +24,570 \\ \hline 26,481 \end{array}$	$\begin{array}{r} 48 \\ \times 81 \\ \hline 48 \\ +3,840 \\ \hline 3,888 \end{array}$

Find each product using the standard algorithm.

$\begin{array}{r} 192 \\ \times 384 \\ \hline 768 \\ 15,360 \\ +57,600 \\ \hline 73,728 \end{array}$	$\begin{array}{r} 576 \\ \times 901 \\ \hline 576 \\ 0 \\ +518,400 \\ \hline 518,976 \end{array}$	$\begin{array}{r} 283 \\ \times 475 \\ \hline 1,415 \\ 19,810 \\ +113,200 \\ \hline 134,425 \end{array}$	$\begin{array}{r} 609 \\ \times 182 \\ \hline 1,218 \\ 48,720 \\ +60,900 \\ \hline 110,838 \end{array}$	$\begin{array}{r} 374 \\ \times 560 \\ \hline 0 \\ 22,440 \\ +187,000 \\ \hline 209,440 \end{array}$
$\begin{array}{r} 918 \\ \times 273 \\ \hline 2,754 \\ 64,260 \\ +183,600 \\ \hline 250,614 \end{array}$	$\begin{array}{r} 645 \\ \times 190 \\ \hline 0 \\ 58,050 \\ +64,500 \\ \hline 122,550 \end{array}$	$\begin{array}{r} 827 \\ \times 364 \\ \hline 3,308 \\ 49,620 \\ +248,100 \\ \hline 301,028 \end{array}$	$\begin{array}{r} 519 \\ \times 280 \\ \hline 0 \\ 41,520 \\ +103,800 \\ \hline 145,320 \end{array}$	$\begin{array}{r} 135 \\ \times 246 \\ \hline 810 \\ 5,400 \\ +27,000 \\ \hline 209,440 \end{array}$
$\begin{array}{r} 810 \\ \times 791 \\ \hline 810 \\ 72,900 \\ +567,000 \\ \hline 640,710 \end{array}$	$\begin{array}{r} 113 \\ \times 124 \\ \hline 452 \\ 2,260 \\ +11,300 \\ \hline 14,012 \end{array}$	$\begin{array}{r} 517 \\ \times 682 \\ \hline 1,034 \\ 41,360 \\ +310,200 \\ \hline 352,594 \end{array}$	$\begin{array}{r} 224 \\ \times 921 \\ \hline 224 \\ 4,480 \\ +201,600 \\ \hline 206,304 \end{array}$	$\begin{array}{r} 683 \\ \times 235 \\ \hline 3,415 \\ 20,490 \\ +136,600 \\ \hline 160,505 \end{array}$

Find each product.

$$\begin{array}{r} 13 \\ \times 2 \\ \hline 26 \end{array}$$

$$\begin{array}{r} 46 \\ \times 5 \\ \hline 230 \end{array}$$

$$\begin{array}{r} 79 \\ \times 8 \\ \hline 632 \end{array}$$

$$\begin{array}{r} 81 \\ \times 9 \\ \hline 729 \end{array}$$

$$\begin{array}{r} 27 \\ \times 3 \\ \hline 81 \end{array}$$

$$\begin{array}{r} 465 \\ \times 20 \\ \hline 0 \\ +9,300 \\ \hline 9,300 \end{array}$$

$$\begin{array}{r} 908 \\ \times 39 \\ \hline 8,172 \\ +27,240 \\ \hline 35,412 \end{array}$$

$$\begin{array}{r} 172 \\ \times 48 \\ \hline 1,376 \\ +6,880 \\ \hline 8,256 \end{array}$$

$$\begin{array}{r} 635 \\ \times 57 \\ \hline 4,445 \\ +31,750 \\ \hline 36,195 \end{array}$$

$$\begin{array}{r} 491 \\ \times 61 \\ \hline 491 \\ +29,460 \\ \hline 29,951 \end{array}$$

$$\begin{array}{r} 203 \\ \times 847 \\ \hline 1,421 \\ 8,120 \\ +162,400 \\ \hline 171,941 \end{array}$$

$$\begin{array}{r} 495 \\ \times 560 \\ \hline 0 \\ 29,700 \\ +247,500 \\ \hline 277,200 \end{array}$$

$$\begin{array}{r} 857 \\ \times 192 \\ \hline 1,714 \\ 77,130 \\ +85,700 \\ \hline 164,544 \end{array}$$

$$\begin{array}{r} 610 \\ \times 837 \\ \hline 4,270 \\ 18,300 \\ +488,000 \\ \hline 510,570 \end{array}$$

$$\begin{array}{r} 293 \\ \times 465 \\ \hline 1,465 \\ 17,580 \\ +117,200 \\ \hline 136,245 \end{array}$$

$$\begin{array}{r} 2,657 \\ \times 4 \\ \hline 10,628 \end{array}$$

$$\begin{array}{r} 4,483 \\ \times 75 \\ \hline 22,415 \\ +313,810 \\ \hline 336,225 \end{array}$$

$$\begin{array}{r} 6,920 \\ \times 657 \\ \hline 48,440 \\ 346,000 \\ +4,152,000 \\ \hline 4,546,440 \end{array}$$

$$\begin{array}{r} 1,102 \\ \times 48 \\ \hline 8,816 \\ +44,080 \\ \hline 52,896 \end{array}$$

$$\begin{array}{r} 3,938 \\ \times 3 \\ \hline 11,814 \end{array}$$

Find each quotient using an area model.

Ex $493 \div 6 = 82 \text{ R}1$

70	+ 10	+ 2	R1
6	420	60	12

$$\begin{array}{r} 493 \\ -420 \\ \hline 73 \\ -60 \\ \hline 13 \\ -12 \\ \hline 1 \end{array}$$

① $257 \div 3 = 85 \text{ R}2$

80	+ 5	R2
3	240	15

$$\begin{array}{r} 257 \\ -240 \\ \hline 17 \\ -15 \\ \hline 2 \end{array}$$

② $1,042 \div 8 = 130 \text{ R}2$

100	+ 30	R2
8	800	240

$$\begin{array}{r} 1,042 \\ -800 \\ \hline 242 \\ -240 \\ \hline 2 \end{array}$$

③ $956 \div 7 = 136 \text{ R}4$

100	+ 30	+ 6	R4
7	700	210	42

$$\begin{array}{r} 956 \\ -700 \\ \hline 256 \\ -210 \\ \hline 46 \\ -42 \\ \hline 4 \end{array}$$

④ $2,421 \div 9 = 269$

200	+ 50	+ 10	+ 9
9	1,800	450	90
81			

$$\begin{array}{r} 2,421 \\ -1,800 \\ \hline 621 \\ -450 \\ \hline 171 \\ -162 \\ \hline 9 \end{array}$$

⑤ $843 \div 4 = 210 \text{ R}3$

200	+ 10	R3
4	800	40

$$\begin{array}{r} 843 \\ -800 \\ \hline 43 \\ -40 \\ \hline 3 \end{array}$$

Use multiplication to solve each word problem.

- ① According to the nutrition label on a cereal box, each serving of cereal contains 22 grams of carbohydrates. If there are 16 servings of cereal in the box, how many total grams of carbohydrates are in the entire box?

$$\begin{array}{r} 22 \\ \times 16 \\ \hline 132 \\ +220 \\ \hline 352 \end{array}$$

352 grams

- ② It takes the planet Neptune about 165 years to orbit the Sun. How long would it take Neptune to orbit the Sun 25 times?

$$\begin{array}{r} 165 \\ \times 25 \\ \hline 825 \\ +3,300 \\ \hline 4,125 \end{array}$$

4,125 years

- ③ An acre is an area equal to 4,480 square yards. What is the area, in square yards, of a 400-acre farm?

$$\begin{array}{r} 4,480 \\ \times 400 \\ \hline 0 \\ 0 \\ +1,792,000 \\ \hline 1,792,000 \end{array}$$

1,792,000 square yards

- ④ A bakery charges \$4 per loaf of bread. Last month, they sold 1,235 loaves. How much money did they make from bread sales last month?

$$\begin{array}{r} 1,235 \\ \times 4 \\ \hline 4,940 \end{array}$$

\$4,940

- ⑤ Mt. Waialeale in Hawaii receives an average of 9,763 mm of rain annually. How much rain (in mm) would be expected over a 5-year period?

$$\begin{array}{r} 9,763 \\ \times 5 \\ \hline 48,815 \end{array}$$

48,815 mm of rain

Find each quotient using the standard algorithm.

Ex $4 \overline{)387} = 96 \text{ R}3$

$$\begin{array}{r} 96 \text{ R}3 \\ 4 \overline{)387} \\ \underline{-36} \\ 27 \\ \underline{-24} \\ 3 \end{array}$$

① $6 \overline{)1,750} = 291 \text{ R}4$

$$\begin{array}{r} 291 \text{ R}4 \\ 6 \overline{)1,750} \\ \underline{-12} \\ 55 \\ \underline{-54} \\ 10 \\ \underline{-6} \\ 4 \end{array}$$

② $5 \overline{)3,921} = 784 \text{ R}1$

$$\begin{array}{r} 784 \text{ R}1 \\ 5 \overline{)3,921} \\ \underline{-35} \\ 42 \\ \underline{-40} \\ 21 \\ \underline{-20} \\ 1 \end{array}$$

③ $8 \overline{)2,017} = 252 \text{ R}1$

$$\begin{array}{r} 252 \text{ R}1 \\ 8 \overline{)2,017} \\ \underline{-16} \\ 41 \\ \underline{-40} \\ 17 \\ \underline{-16} \\ 1 \end{array}$$

④ $3 \overline{)816} = 272$

$$\begin{array}{r} 272 \\ 3 \overline{)816} \\ \underline{-6} \\ 21 \\ \underline{-21} \\ 0 \end{array}$$

⑤ $9 \overline{)647} = 71 \text{ R}8$

$$\begin{array}{r} 71 \text{ R}8 \\ 9 \overline{)647} \\ \underline{-63} \\ 17 \\ \underline{-18} \\ 8 \end{array}$$

⑥ $7 \overline{)1,982} = 283 \text{ R}1$

$$\begin{array}{r} 283 \text{ R}1 \\ 7 \overline{)1,982} \\ \underline{-14} \\ 58 \\ \underline{-56} \\ 22 \\ \underline{-21} \\ 1 \end{array}$$

⑦ $2 \overline{)7,302} = 3,651$

$$\begin{array}{r} 3,651 \\ 2 \overline{)7,302} \\ \underline{-6} \\ 13 \\ \underline{-12} \\ 10 \\ \underline{-10} \\ 02 \\ \underline{-0} \\ 2 \end{array}$$

⑧ $4 \overline{)9,742} = 2,435 \text{ R}2$

$$\begin{array}{r} 2,435 \text{ R}2 \\ 4 \overline{)9,742} \\ \underline{-8} \\ 17 \\ \underline{-16} \\ 14 \\ \underline{-12} \\ 22 \\ \underline{-20} \\ 2 \end{array}$$

⑨ $6 \overline{)762} = 127$

$$\begin{array}{r} 127 \\ 6 \overline{)762} \\ \underline{-6} \\ 16 \\ \underline{-12} \\ 42 \\ \underline{-42} \\ 0 \end{array}$$

⑩ $9 \overline{)4,108} = 456 \text{ R}4$

$$\begin{array}{r} 456 \text{ R}4 \\ 9 \overline{)4,108} \\ \underline{-36} \\ 50 \\ \underline{-45} \\ 58 \\ \underline{-54} \\ 4 \end{array}$$

⑪ $7 \overline{)21,564} = 3,080 \text{ R}4$

$$\begin{array}{r} 3,080 \text{ R}4 \\ 7 \overline{)21,564} \\ \underline{-21} \\ 05 \\ \underline{-0} \\ 56 \\ \underline{-56} \\ 04 \\ \underline{-0} \\ 4 \end{array}$$

Find each quotient using an area model.

$$\text{EX } 2,492 \div 16 = 155 \text{ R}12$$

$$16 \begin{array}{|c|c|c|} \hline 100 & 50 & 5 \\ \hline \hline 1,600 & 800 & 80 \\ \hline \hline 2,492 & 892 & 92 \\ \hline -1,600 & -800 & -80 \\ \hline 892 & 92 & 12 \end{array}$$

$$\textcircled{1} 876 \div 25 = 35 \text{ R}1$$

$$25 \begin{array}{|c|c|c|} \hline 20 & 10 & 5 \\ \hline \hline 500 & 250 & 125 \\ \hline \hline 876 & 376 & 126 \\ \hline -500 & -250 & -125 \\ \hline 376 & 126 & 1 \end{array}$$

$$\textcircled{2} 5,921 \div 32 = 185 \text{ R}1$$

$$32 \begin{array}{|c|c|c|c|} \hline 100 & 50 & 30 & 5 \\ \hline \hline 3,200 & 1,600 & 960 & 160 \\ \hline \hline 5,921 & 2,721 & 1,121 & 161 \\ \hline -3,200 & -1,600 & -960 & -160 \\ \hline 2,721 & 1,121 & 161 & 1 \end{array}$$

$$\textcircled{3} 713 \div 63 = 11 \text{ R}20$$

$$63 \begin{array}{|c|c|} \hline 10 & 1 \\ \hline \hline 630 & 63 \\ \hline \hline 713 & 83 \\ \hline -630 & -63 \\ \hline 83 & 20 \end{array}$$

$$\textcircled{4} 3,801 \div 29 = 131 \text{ R}2$$

$$29 \begin{array}{|c|c|c|c|} \hline 100 & 20 & 10 & 1 \\ \hline \hline 2,900 & 580 & 290 & 29 \\ \hline \hline 3,801 & 901 & 321 & 31 \\ \hline -2,900 & -580 & -290 & -29 \\ \hline 901 & 321 & 31 & 2 \end{array}$$

$$\textcircled{5} 1,392 \div 81 = 17 \text{ R}15$$

$$81 \begin{array}{|c|c|} \hline 10 & 7 \\ \hline \hline 810 & 567 \\ \hline \hline 1,392 & 582 \\ \hline -810 & -567 \\ \hline 582 & 15 \end{array}$$

Find each quotient using the standard algorithm.

$$\textcircled{1} \begin{array}{r} 42 \text{ R}18 \\ 23 \overline{)984} \\ \underline{-92} \\ 64 \\ \underline{-46} \\ 18 \end{array}$$

$$\textcircled{2} \begin{array}{r} 30 \text{ R}4 \\ 21 \overline{)634} \\ \underline{-63} \\ 04 \\ \underline{-0} \\ 4 \end{array}$$

$$\textcircled{3} \begin{array}{r} 11 \text{ R}17 \\ 76 \overline{)853} \\ \underline{-76} \\ 93 \\ \underline{-76} \\ 17 \end{array}$$

$$\textcircled{4} \begin{array}{r} 15 \text{ R}7 \\ 62 \overline{)937} \\ \underline{-62} \\ 317 \\ \underline{-310} \\ 7 \end{array}$$

$$\textcircled{5} \begin{array}{r} 49 \\ 18 \overline{)882} \\ \underline{-72} \\ 162 \\ \underline{-162} \\ 0 \end{array}$$

$$\textcircled{6} \begin{array}{r} 14 \text{ R}48 \\ 51 \overline{)762} \\ \underline{-51} \\ 252 \\ \underline{-204} \\ 48 \end{array}$$

$$\textcircled{7} \begin{array}{r} 10 \text{ R}17 \\ 91 \overline{)927} \\ \underline{-91} \\ 17 \\ \underline{-17} \\ 0 \end{array}$$

$$\textcircled{8} \begin{array}{r} 9 \text{ R}3 \\ 82 \overline{)741} \\ \underline{-738} \\ 3 \end{array}$$

$$\textcircled{9} \begin{array}{r} 19 \\ 47 \overline{)893} \\ \underline{-47} \\ 423 \\ \underline{-423} \\ 0 \end{array}$$

Find each quotient using the standard algorithm.

$$\textcircled{1} \begin{array}{r} 81 \text{ R}2 \\ 47 \overline{)3809} \\ \underline{-376} \\ 49 \\ \underline{-47} \\ 2 \end{array}$$

$$\textcircled{2} \begin{array}{r} 231 \text{ R}11 \\ 33 \overline{)7634} \\ \underline{-66} \\ 103 \\ \underline{-99} \\ 44 \\ \underline{-33} \\ 11 \end{array}$$

$$\textcircled{3} \begin{array}{r} 229 \text{ R}4 \\ 13 \overline{)2981} \\ \underline{-26} \\ 38 \\ \underline{-26} \\ 121 \\ \underline{-117} \\ 4 \end{array}$$

$$\textcircled{4} \begin{array}{r} 107 \text{ R}28 \\ 39 \overline{)4201} \\ \underline{-39} \\ 30 \\ \underline{-0} \\ 301 \\ \underline{-273} \\ 28 \end{array}$$

$$\textcircled{5} \begin{array}{r} 210 \text{ R}5 \\ 14 \overline{)2945} \\ \underline{-28} \\ 14 \\ \underline{-14} \\ 05 \\ \underline{-0} \\ 5 \end{array}$$

$$\textcircled{6} \begin{array}{r} 179 \\ 42 \overline{)7518} \\ \underline{-42} \\ 331 \\ \underline{-294} \\ 378 \\ \underline{-378} \\ 0 \end{array}$$

$$\textcircled{7} \begin{array}{r} 15 \text{ R}22 \\ 98 \overline{)1492} \\ \underline{-98} \\ 512 \\ \underline{-490} \\ 22 \end{array}$$

$$\textcircled{8} \begin{array}{r} 301 \text{ R}12 \\ 20 \overline{)6032} \\ \underline{-60} \\ 03 \\ \underline{-0} \\ 32 \\ \underline{-20} \\ 12 \end{array}$$

$$\textcircled{9} \begin{array}{r} 131 \text{ R}9 \\ 52 \overline{)6821} \\ \underline{-52} \\ 162 \\ \underline{-156} \\ 61 \\ \underline{-52} \\ 9 \end{array}$$

Use division to solve each word problem.

- $\textcircled{1}$ A teacher spent \$273 on books for his classroom. If each book cost \$13, how many books did he buy?

21 books

$$\begin{array}{r} 21 \\ 13 \overline{)273} \\ \underline{-26} \\ 13 \\ \underline{-13} \\ 0 \end{array}$$

- $\textcircled{2}$ Carmen is putting photos into an album. Each page holds four photos. How many pages will she need to hold 187 photos?

47 pages

$$\begin{array}{r} 46 \text{ R}3 \\ 4 \overline{)187} \\ \underline{-16} \\ 27 \\ \underline{-24} \\ 3 \end{array}$$

- $\textcircled{3}$ The five fifth grade classes at a school raised a combined \$1,750 in a fundraiser. What is the average amount raised per class?

\$350

$$\begin{array}{r} 350 \\ 5 \overline{)1,750} \\ \underline{-15} \\ 25 \\ \underline{-25} \\ 00 \\ \underline{-0} \\ 0 \end{array}$$

- $\textcircled{4}$ Allison can bake a batch of 48 mini-muffins at a time. If she needs to bake a total of 240 mini-muffins, how many batches will she need?

5 batches

$$\begin{array}{r} 5 \\ 48 \overline{)240} \\ \underline{-240} \\ 0 \end{array}$$

- $\textcircled{5}$ It takes Earth 24 hours to rotate once on its axis. The same process takes Venus 5,832 hours. How many rotations does Earth make in the time it takes Venus to complete one rotation?

243 rotations

$$\begin{array}{r} 243 \\ 24 \overline{)5,832} \\ \underline{-48} \\ 103 \\ \underline{-96} \\ 72 \\ \underline{-72} \\ 0 \end{array}$$

Find the addition or subtraction rule for each sequence and fill in the missing number in each pattern.

EX 5, 8, 11, 14, 17

Rule: Add 3

① 67, 57, 47, 37, 27

Rule: Subtract 10

② 54, 65, 76, 87, 98

Rule: Add 11

③ 110, 102, 94, 86, 78

Rule: Subtract 8

④ 331, 324, 317, 310, 303

Rule: Subtract 7

⑤ 171, 184, 197, 210, 223

Rule: Add 13

Write the rule shown by each input-output table.

EX Rule: Subtract 5

Input	Output
12	7
17	10
20	15

⑥ Rule: Add 9

Input	Output
9	18
25	34
37	46

⑦ Rule: Add 12

Input	Output
13	25
30	42
42	54

⑧ Rule: Subtract 6

Input	Output
25	19
34	28
51	45

Find the multiplication or division rule for each sequence and fill in the missing number in each pattern.

EX 2, 6, 18, 54, 162

Rule: Multiply by 3

① 512, 128, 32, 8, 2

Rule: Divide by 4

② 21, 42, 84, 168, 336

Rule: Multiply by 2

③ 1,875, 375, 75, 15, 3

Rule: Divide by 5

④ 324, 108, 36, 12, 4

Rule: Divide by 3

⑤ 1, 6, 36, 216, 1,296

Rule: Multiply by 6

Write the rule shown by each input-output table.

EX Rule: Divide by 10

Input	Output
70	7
120	12
250	25

⑥ Rule: Multiply by 4

Input	Output
7	28
8	32
12	48

⑦ Rule: Multiply by 5

Input	Output
6	30
11	55
25	250

⑧ Rule: Divide by 2

Input	Output
24	12
46	23
52	26

Fill in the missing numbers on each input-output table using the given rule.

EX Rule: Add 7.

Input	Output
3	10
6	<u>13</u>
11	18
<u>15</u>	22

① Rule: Subtract 12.

Input	Output
13	1
17	<u>5</u>
26	14
<u>29</u>	17

② Rule: Add 8.

Input	Output
5	13
<u>8</u>	16
12	<u>20</u>
15	23

③ Rule: Multiply by 8.

Input	Output
3	<u>24</u>
4	32
<u>7</u>	56
9	72

④ Rule: Divide by 6.

Input	Output
12	2
36	<u>6</u>
42	7
<u>72</u>	12

⑤ Rule: Multiply by 11.

Input	Output
3	33
5	<u>55</u>
7	77
<u>11</u>	121

Answer each word problem involving number patterns.

Derek is building a block tower consisting of several rows of blocks. He puts 16 blocks on the bottom row, 13 blocks on the second row, and 10 blocks on the third row.

- ① If Derek continues this pattern, how many blocks will be in the fourth row?

$10 - 3 = 7$ blocks

- ② If Derek continues this pattern until he reaches a row that has only one block, how many rows will the tower have?

6 rows (containing 16, 13, 10, 7, 4, and 1 blocks)

- ③ If Derek continues this pattern until he reaches a row that has only one block, how many total blocks will be in the tower?

$16 + 13 + 10 + 7 + 4 + 1 = 51$ blocks

Sonia is putting money in a jar each day to save up to buy a toy. On the first day, she puts in a nickel. On the second day, she puts in a dime. On the third day, she puts in \$0.20, and on the fourth day, she puts in \$0.40.

- ④ If Sonia continues this pattern, how much money will she put in the jar on the fifth day?

$\$0.40 \times 2 = \0.80

- ⑤ If Sonia continues this pattern, what is the total amount of money she will have put in the jar at the end of six days?

$\$0.05 + \$0.10 + \$0.20 + \$0.40 + \$0.80 + \$1.60 = \$3.15$

Add, subtract, multiply, or divide to solve each word problem.

- ① Envelopes come in boxes of 25. Mary needs 268 envelopes to mail invitations to a large event. How many boxes of envelopes does she need?

$$\begin{array}{r} 10 \text{ R } 18 \\ 25 \overline{) 268} \\ \underline{-25} \\ 18 \\ \underline{-0} \\ 18 \end{array}$$

She needs 11 boxes of envelopes.

- ② Loose leaf paper comes in packs of 250 sheets. How many sheets of paper are in 12 packs?

$$\begin{array}{r} 250 \\ \times 12 \\ \hline 500 \\ +2,500 \\ \hline 3,000 \end{array}$$

There are 3,000 sheets in 12 packs.

- ③ Carmen bought a phone for \$499 and a case for \$15. What was Carmen's total cost for the phone and case?

$$\begin{array}{r} 499 \\ + 15 \\ \hline 514 \end{array}$$

His total cost was \$514.

- ④ A city's population was approximately 5,717,000 in 2020. This was an increase of 268,000 since 2010. What was the population of the city in 2010?

$$\begin{array}{r} 5,717,000 \\ - 268,000 \\ \hline 5,449,000 \end{array}$$

The population was 5,449,000 in 2010.

- ⑤ At an average speed of 48 miles per hour, how long would it take a car to travel 336 miles?

$$\begin{array}{r} 7 \\ 48 \overline{) 336} \\ \underline{-336} \\ 0 \end{array}$$

It would take 7 hours.

Use the information below to answer each word problem.

The table below lists the lengths of the five longest rivers in Europe.

River	Length (miles)
Volga	2,194
Danube	1,777
Ural	1,509
Dnieper	1,367
Don	1,162

- ① How much longer is the Volga River than the Ural River?

$$2,194 - 1,509 = 685 \text{ miles}$$

- ② What is the combined length of the three longest rivers?

$$2,194 + 1,777 + 1,509 = 5,480 \text{ miles}$$

- ③ The sixth longest river in Europe is the Pechora River, which is 653 miles shorter than the Danube. How long is the Pechora?

$$1,777 - 653 = 1,124 \text{ miles}$$

- ④ What is the length of the Ural River in yards?

$$1,509 \div 3 = 503 \text{ yards}$$

- ⑤ What would be the length of a river that was exactly twice as long as the Dnieper River?

$$1,367 \times 2 = 2,734 \text{ miles}$$

Solve each multi-step word problem.

- ① Adrian has 15 marbles, Brian has 22 marbles, and Chris has 17 marbles. If they combined all their marbles and then divided them evenly among themselves, how many marbles would each boy get?

$$15 + 22 + 17 = 54$$

$$\begin{array}{r} 18 \\ 3 \overline{) 54} \\ \underline{-3} \\ 24 \\ \underline{-24} \\ 0 \end{array}$$

They would each get 18 marbles.

- ② Kelly can type at an average speed of 65 words per minute. Suzanne can type 72 words per minute. If they each typed non-stop for 3 minutes, how many more words would Suzanne be able to type than Kelly?

$$72 - 65 = 7$$

$$7 \times 3 = 21$$

Suzanne could type 21 more words than Kelly.

- ③ Thalia takes her pulse and counts 31 heartbeats in 30 seconds. What is her heart rate in beats per minute?

$$60 \div 30 = 2$$

$$31 \times 2 = 62$$

Thalia's heart rate is 62 beats per minute.

- ④ Colin baked 4 batches of cookies for a party. Each batch contained 18 cookies. By the end of the party, 53 of the cookies had been eaten. How many were left over?

$$18 \times 4 = 72$$

$$72 - 53 = 19$$

There were 19 cookies left over.

Solve each multi-step word problem.

- ① Sadie rides her bike 5 blocks to her friend Callie's house, then they ride together 8 blocks to school. On the way home, they take the same route in reverse. How many total blocks does Sadie ride?

$$5 + 8 = 13$$

$$13 \times 2 = 26$$

Sadie rides 26 blocks.

- ② Nick is selling candy bars for a fundraiser. Each bar costs \$2. His neighbor buys 3 milk chocolate bars, 2 dark chocolate bars, 1 caramel bar, and 1 peanut butter bar from Nick. What is the total cost of the neighbor's candy order?

$$3 + 2 + 1 + 1 = 7$$

$$7 \times \$2 = \$14$$

The total cost is \$14.

- ③ Mrs. Smith had pack of 200 sheets of construction paper. She gave 4 sheets to each of the 23 students in her class. How many sheets were left in the pack?

$$23 \times 4 = 92$$

$$200 - 92 = 108$$

There were 108 sheets left.

- ④ In Columbus, Ohio, the lowest recorded temperature in 2023 was 12°F. The highest recorded temperature in Columbus that year was 2° less than 8 times the lowest temperature of the year. What was the highest temperature in Columbus in 2023?

$$12 \times 8 = 96$$

$$96 - 2 = 94$$

The highest temperature was 94°F.

Write an expression for each operation described.

- EX Subtract 4 from 12

$$12 - 4$$

- 1 Multiply 6 by 3

$$6 \times 3$$

- 2 The sum of 9 and 4

$$9 + 4$$

- 3 25 divided by 5

$$25 \div 5$$

- 4 10 deducted from 15

$$15 - 10$$

- 5 The product of 2 and 13

$$2 \times 13$$

- 6 36 divided by 4

$$36 \div 4$$

- 7 6 added to 15

$$15 + 6$$

- 8 5 more than n

$$n + 5$$

- 9 x divided by 2

$$x \div 2$$

- 10 10 times m

$$10 \times m$$

- 11 a minus b

$$a - b$$

Write a single expression for each set of operations.

- EX 2 subtracted from the sum of 3 and 7 $3 + 7 - 2$

- 1 7 added to the sum of 6 and 2 $6 + 2 + 7$

- 2 Subtract 2 from 8, then subtract 1 from the result $8 - 2 - 1$

- 3 The product of 6 and 4 divided by 8 $6 \times 4 \div 8$

- 4 Divide 18 by 2, and multiply the result by 5 $18 \div 2 \times 5$

Evaluate each expression.

EX $6 + 3 - 4 = 5$

5 $7 - 5 + 10 = 12$

6 $5 + 2 + 8 = 15$

7 $18 - 2 - 6 = 10$

8 $8 + 4 - 3 = 9$

9 $6 - 1 + 3 = 8$

10 $12 \div 3 \div 2 = 2$

11 $14 \div 2 \times 3 = 21$

12 $4 \times 6 \times 2 = 48$

13 $5 \times 6 \div 2 = 15$

Evaluate each expression containing parentheses.

EX $4 \times (3 + 2) = 20$
 $4 \times 5 = 20$

1 $(4 \times 3) + 2 = 14$
 $12 + 2 = 14$

2 $4 + (3 \times 2) = 10$
 $4 + 6 = 10$

3 $(4 + 3) \times 2 = 14$
 $7 \times 2 = 14$

4 $4 \times (3 - 2) = 4$
 $4 \times 1 = 4$

5 $(4 - 3) \times 2 = 2$
 $1 \times 2 = 2$

6 $4 \div (3 - 2) = 4$
 $4 \div 1 = 4$

7 $(4 \div 2) \times 3 = 6$
 $2 \times 3 = 6$

8 $(4 + 2) \div 3 = 2$
 $6 \div 3 = 2$

9 $(4 \div 2) + 3 = 5$
 $2 + 3 = 5$

Fill in the missing sign that would make each equation true.

EX $5 \times (6 \square 3) = 15$

10 $3 \times (6 \square 2) = 24$

11 $20 - (5 \square 2) = 10$

12 $4 + (9 \square 3) = 7$

13 $36 \square (4 + 5) = 4$

14 $12 \square (24 \div 2) = 24$

15 $(16 \square 4) \times 3 = 36$

16 $(7 \square 4) + 4 = 32$

Write a single expression for each set of operations.

- EX 7 times the sum of 2 and 4 $7 \times (2 + 4)$

- 1 3 more than the product of 4 and 6 $(4 \times 6) + 3$

- 2 2 less than the result of 6 times 3 $(6 \times 3) - 2$

- 3 20 divided by the sum of 2 and 3 $20 \div (2 + 3)$

- 4 6 multiplied by the sum of 7 and 3 $6 \times (7 + 3)$

- 5 Subtract 4 from 8, then multiply the result by 12 $(8 - 4) \times 12$

- 6 Add 4 to 18, then divide the result by 2 $(4 + 18) \div 2$

- 7 5 more than 4 multiplied by p $(4 \times p) + 5$

- 8 s divided by the result of 6 minus 2 $s \div (6 - 2)$

Evaluate each expression containing brackets and parentheses.

EX $2 \times [(10 + 2) \div 4] = \underline{6}$

$$2 \times [12 \div 4] =$$

$$2 \times 3 = 6$$

① $[4 + (2 \times 3)] \times 5 = \underline{50}$

$$[4 + 6] \times 5 =$$

$$10 \times 5 = 50$$

② $24 \div [18 - (4 \times 3)] = \underline{4}$

$$24 \div [18 - 12] =$$

$$24 \div 6 = 4$$

③ $[12 - (10 \div 2)] \times 3 = \underline{21}$

$$[12 - 5] \times 3 =$$

$$7 \times 3 = 21$$

④ $4 \times [(16 \div 2) + 1] = \underline{36}$

$$4 \times [8 + 1] =$$

$$4 \times 9 = 36$$

⑤ $[3 \times (1 + 7)] - 9 = \underline{15}$

$$[3 \times 8] - 9 =$$

$$24 - 9 = 15$$

⑥ $9 - [(3 + 4 + 5) \div 4] = \underline{6}$

$$9 - [12 \div 4] =$$

$$9 - 3 = 6$$

⑦ $[60 \div (6 \times 2)] + 8 = \underline{13}$

$$[60 \div 12] + 8 =$$

$$5 + 8 = 13$$

⑧ $[(4 \div 2) + 9] - 5 = \underline{6}$

$$[2 + 9] - 5 =$$

$$11 - 5 = 6$$

⑨ $[(29 - 7) \div 2] \times 4 = \underline{44}$

$$[22 \div 2] \times 4 =$$

$$11 \times 4 = 44$$

Use the order of operations (PEMDAS) to evaluate each expression.

EX $10^2 - 5 \times (4 + 2) = \underline{70}$

Parentheses: $10^2 - 5 \times 6 =$

Exponent: $100 - 5 \times 6 =$

Multiply/Divide: $100 - 30 =$

Add/Subtract: 70

① $3 + 10^3 \div (25 \times 4) = \underline{13}$

Parentheses: $3 + 10^3 + 100 =$

Exponent: $3 + 1,000 + 100 =$

Multiply/Divide: $3 + 10 =$

Add/Subtract: 13

② $(12 \times 12) - 10^2 \div 5 = \underline{124}$

Parentheses: $144 - 10^2 + 5 =$

Exponent: $144 - 100 + 5 =$

Multiply/Divide: $144 - 20 =$

Add/Subtract: 124

③ $10^3 - 5 \times (24 + 16) = \underline{800}$

Parentheses: $10^3 - 5 \times 40 =$

Exponent: $1,000 - 5 \times 40 =$

Multiply/Divide: $1,000 - 200 =$

Add/Subtract: 800

Fill in the correct bubble to answer each question.

- ① Which operation should you perform **first** to evaluate the expression below?

$$3 + 20 \div (6 - 2) = ?$$

- 3 + 20
- 20 \div 6
- 6 - 2

- ② Which operation should you perform **first** to evaluate the expression below?

$$5 + 25 \div 5 - 2 = ?$$

- 5 + 25
- 25 \div 5
- 5 - 2

- ③ Which operation should you perform **first** to evaluate the expression below?

$$(10 - 7) \times 4 + 2 = ?$$

- 10 - 7
- 7 \times 4
- 4 + 2

- ④ Which operation should you perform **first** to evaluate the expression below?

$$3 \times 4 + 12 \div 6 = ?$$

- 3 \times 4
- 4 + 2
- 12 \div 6

- ⑤ Which operation should you perform **first** to evaluate the expression below?

$$7 + 15 \div 3 - 1 = ?$$

- 7 + 15
- 15 \div 3
- 3 - 1

Evaluate each expression by following the order of operations.

① $15 + 30 \div 5 - 2 = \underline{19}$

$$15 + 6 - 2 =$$

$$21 - 2 = 19$$

② $4 + 40 \div (6 + 2) = \underline{9}$

$$4 + 40 \div 8 =$$

$$4 + 5 = 9$$

③ $(15 - 6) \times 3 + 5 = \underline{32}$

$$9 \times 3 + 5 =$$

$$27 + 5 = 32$$

④ $8 \times 4 + 18 \div 3 = \underline{38}$

$$32 + 18 \div 3 =$$

$$32 + 6 = 38$$

⑤ $8 + 36 \div 4 - 3 = \underline{14}$

$$8 + 9 - 3 =$$

$$17 - 3 = 14$$

⑥ $10^2 - 4 \times (9 + 3) = \underline{52}$

$$10^2 - 4 \times 12 =$$

$$100 - 4 \times 12 =$$

$$100 - 48 = 52$$

⑦ $50 - 16 \div 4 \times 7 = \underline{22}$

$$50 - 4 \times 7 =$$

$$50 - 28 = 22$$

⑧ $5 \times 8 \div (7 + 3) = \underline{4}$

$$5 \times 8 \div 10 =$$

$$40 \div 10 = 4$$

⑨ $12 + 24 \div 3 - 15 = \underline{5}$

$$12 + 8 - 15 =$$

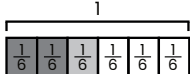
$$20 - 15 = 5$$

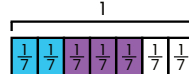
⑩ $6 \times 6 + 21 \div 7 = \underline{39}$

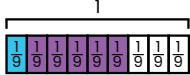
$$36 + 21 \div 7 =$$

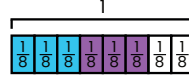
$$36 + 3 = 39$$

Use two different colors to show the fractions on the bar model. Then, add. Write your answer in lowest terms.

EX 
 $\frac{2}{6} + \frac{1}{6} = \frac{3}{6} = \frac{1}{2}$

① 
 $\frac{2}{7} + \frac{3}{7} = \frac{5}{7}$

② 
 $\frac{1}{9} + \frac{5}{9} = \frac{6}{9} = \frac{2}{3}$

③ 
 $\frac{3}{8} + \frac{3}{8} = \frac{6}{8} = \frac{3}{4}$

Add each pair of fractions. Write your answer in lowest terms.

④ $\frac{2}{9} + \frac{1}{9} = \frac{3}{9} = \frac{1}{3}$

⑤ $\frac{1}{12} + \frac{3}{12} = \frac{4}{12} = \frac{1}{3}$

⑥ $\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$

⑦ $\frac{3}{10} + \frac{2}{10} = \frac{5}{10} = \frac{1}{2}$

⑧ $\frac{4}{11} + \frac{6}{11} = \frac{10}{11}$

⑨ $\frac{4}{15} + \frac{1}{15} = \frac{5}{15} = \frac{1}{3}$

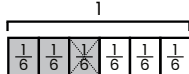
⑩ $\frac{3}{7} + \frac{1}{7} = \frac{4}{7}$

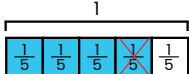
⑪ $\frac{1}{4} + \frac{2}{4} = \frac{3}{4}$

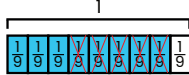
⑫ $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$

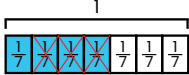
⑬ $\frac{2}{6} + \frac{2}{6} = \frac{4}{6} = \frac{2}{3}$

Fill in the bar model to show subtraction. Then, subtract. Write your answer in lowest terms.

EX 
 $\frac{3}{6} - \frac{1}{6} = \frac{2}{6} = \frac{1}{3}$

① 
 $\frac{4}{5} - \frac{1}{5} = \frac{3}{5}$

② 
 $\frac{8}{9} - \frac{5}{9} = \frac{3}{9} = \frac{1}{3}$

③ 
 $\frac{4}{7} - \frac{3}{7} = \frac{1}{7}$

Subtract each pair of fractions. Write your answer in lowest terms.

④ $\frac{5}{6} - \frac{1}{6} = \frac{4}{6} = \frac{2}{3}$

⑤ $\frac{4}{9} - \frac{2}{9} = \frac{2}{9}$

⑥ $\frac{7}{8} - \frac{3}{8} = \frac{4}{8} = \frac{1}{2}$

⑦ $\frac{9}{10} - \frac{7}{10} = \frac{2}{10} = \frac{1}{5}$

⑧ $\frac{11}{12} - \frac{8}{12} = \frac{3}{12} = \frac{1}{4}$

⑨ $\frac{13}{15} - \frac{7}{15} = \frac{6}{15} = \frac{2}{5}$

⑩ $\frac{5}{7} - \frac{2}{7} = \frac{3}{7}$

⑪ $\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$

⑫ $\frac{10}{11} - \frac{5}{11} = \frac{5}{11}$

⑬ $\frac{9}{14} - \frac{2}{14} = \frac{7}{14} = \frac{1}{2}$

Use a common denominator to add or subtract each pair of fractions with unlike denominators. First, find the least common multiple (LCM) of the denominators. Re-write each fraction as an equivalent fraction with the common denominator. Then, add or subtract.

EX $\frac{2}{3} + \frac{1}{4} = ?$
 LCM of 3 and 4: 12
 $\frac{2}{3} = \frac{8}{12}$ $\frac{1}{4} = \frac{3}{12}$
 $\frac{8}{12} + \frac{3}{12} = \frac{11}{12}$

① $\frac{1}{5} + \frac{2}{3} = ?$
 LCM of 5 and 3: 15
 $\frac{1}{5} = \frac{3}{15}$ $\frac{2}{3} = \frac{10}{15}$
 $\frac{3}{15} + \frac{10}{15} = \frac{13}{15}$

② $\frac{7}{9} - \frac{2}{3} = ?$
 LCM of 9 and 3: 9
 $\frac{7}{9} = \frac{7}{9}$ $\frac{2}{3} = \frac{6}{9}$
 $\frac{7}{9} - \frac{6}{9} = \frac{1}{9}$

③ $\frac{5}{8} - \frac{1}{6} = ?$
 LCM of 8 and 6: 24
 $\frac{5}{8} = \frac{15}{24}$ $\frac{1}{6} = \frac{4}{24}$
 $\frac{15}{24} - \frac{4}{24} = \frac{11}{24}$

④ $\frac{1}{4} + \frac{3}{5} = ?$
 LCM of 4 and 5: 20
 $\frac{1}{4} = \frac{5}{20}$ $\frac{3}{5} = \frac{12}{20}$
 $\frac{5}{20} + \frac{12}{20} = \frac{17}{20}$

⑤ $\frac{1}{2} - \frac{2}{9} = ?$
 LCM of 2 and 9: 18
 $\frac{1}{2} = \frac{9}{18}$ $\frac{2}{9} = \frac{4}{18}$
 $\frac{9}{18} - \frac{4}{18} = \frac{5}{18}$

Re-write each equation so that the fractions have a common denominator. Then, add or subtract. Write the answer in lowest terms.

EX $\frac{1}{6} + \frac{3}{4} = ?$
 $\frac{2}{12} + \frac{9}{12} = \frac{11}{12}$

① $\frac{7}{10} - \frac{1}{5} = ?$
 $\frac{7}{10} - \frac{2}{10} = \frac{5}{10} = \frac{1}{2}$

② $\frac{3}{8} + \frac{5}{12} = ?$
 $\frac{9}{24} + \frac{10}{24} = \frac{19}{24}$

③ $\frac{6}{7} - \frac{1}{2} = ?$
 $\frac{12}{14} - \frac{7}{14} = \frac{5}{14}$

④ $\frac{1}{2} + \frac{3}{8} = ?$
 $\frac{4}{8} + \frac{3}{8} = \frac{7}{8}$

⑤ $\frac{5}{8} - \frac{4}{7} = ?$
 $\frac{35}{56} - \frac{32}{56} = \frac{3}{56}$

⑥ $\frac{3}{20} + \frac{3}{4} = ?$
 $\frac{3}{20} + \frac{15}{20} = \frac{18}{20} = \frac{9}{10}$

⑦ $\frac{5}{6} - \frac{4}{9} = ?$
 $\frac{30}{36} - \frac{16}{36} = \frac{14}{36} = \frac{7}{18}$

⑧ $\frac{1}{12} + \frac{5}{9} = ?$
 $\frac{3}{36} + \frac{20}{36} = \frac{23}{36}$

⑨ $\frac{3}{7} - \frac{1}{4} = ?$
 $\frac{12}{28} - \frac{7}{28} = \frac{5}{28}$

Add or subtract. Write your answer in lowest terms.

$$\textcircled{1} \frac{3}{16} + \frac{5}{16} = \frac{8}{16} = \frac{1}{2}$$

$$\textcircled{2} \frac{17}{18} - \frac{5}{18} = \frac{12}{18} = \frac{2}{3}$$

$$\textcircled{3} \frac{2}{3} + \frac{1}{6} = \frac{5}{6}$$

$$\textcircled{4} \frac{11}{12} - \frac{3}{4} = \frac{2}{12} = \frac{1}{6}$$

$$\textcircled{5} \frac{1}{5} + \frac{3}{7} = \frac{22}{35}$$

$$\textcircled{6} \frac{3}{4} - \frac{2}{5} = \frac{7}{20}$$

$$\textcircled{7} \frac{3}{8} + \frac{3}{8} = \frac{6}{8} = \frac{3}{4}$$

$$\textcircled{8} \frac{5}{8} - \frac{1}{4} = \frac{3}{8}$$

$$\textcircled{9} \frac{7}{11} + \frac{1}{3} = \frac{32}{33}$$

$$\textcircled{10} \frac{9}{14} - \frac{5}{14} = \frac{4}{14} = \frac{2}{7}$$

$$\textcircled{11} \frac{2}{5} + \frac{9}{25} = \frac{19}{25}$$

$$\textcircled{12} \frac{7}{8} - \frac{4}{9} = \frac{31}{72}$$

$$\textcircled{13} \frac{5}{21} + \frac{13}{21} = \frac{18}{21} = \frac{6}{7}$$

$$\textcircled{14} \frac{8}{9} - \frac{5}{12} = \frac{17}{36}$$

$$\textcircled{15} \frac{5}{18} + \frac{2}{9} = \frac{9}{18} = \frac{1}{2}$$

$$\textcircled{16} \frac{23}{24} - \frac{7}{8} = \frac{2}{24} = \frac{1}{12}$$

Add each set of three fractions. Write your answer in lowest terms.

$$\textcircled{1} \frac{3}{8} + \frac{1}{4} + \frac{1}{8} = \frac{6}{8} = \frac{3}{4}$$

$$\textcircled{2} \frac{1}{6} + \frac{1}{3} + \frac{1}{2} = \frac{6}{6} = 1$$

$$\textcircled{3} \frac{2}{5} + \frac{1}{10} + \frac{3}{10} = \frac{8}{10} = \frac{4}{5}$$

$$\textcircled{4} \frac{1}{3} + \frac{1}{4} + \frac{1}{6} = \frac{9}{12} = \frac{3}{4}$$

$$\textcircled{5} \frac{1}{2} + \frac{1}{4} + \frac{1}{5} = \frac{19}{20}$$

$$\textcircled{6} \frac{2}{9} + \frac{1}{6} + \frac{4}{9} = \frac{15}{18} = \frac{5}{6}$$

$$\textcircled{7} \frac{4}{15} + \frac{1}{3} + \frac{1}{5} = \frac{12}{15} = \frac{4}{5}$$

$$\textcircled{8} \frac{1}{7} + \frac{1}{2} + \frac{2}{7} = \frac{13}{14}$$

$$\textcircled{9} \frac{2}{5} + \frac{1}{6} + \frac{1}{3} = \frac{27}{30} = \frac{9}{10}$$

$$\textcircled{10} \frac{1}{6} + \frac{3}{8} + \frac{1}{4} = \frac{19}{24}$$

Use the information below to answer each question.

A teacher let each student in her class choose one animal sticker. There were three different sticker designs: sloth, llama, and penguin. $\frac{1}{4}$ of the students chose a sloth sticker, $\frac{1}{3}$ chose a llama sticker, and the rest chose a penguin sticker.

- ① What fraction of the students chose either a sloth or a llama?

$$\frac{1}{4} + \frac{1}{3} = \frac{3}{12} + \frac{4}{12} = \frac{7}{12}$$

$\frac{7}{12}$ chose a sloth or llama sticker.

- ② What fraction of the students chose a penguin sticker?

$$\frac{12}{12} - \frac{7}{12} = \frac{5}{12}$$

$\frac{5}{12}$ chose a penguin sticker.

- ③ Which sticker was the most popular? Explain your answer.

The largest fraction of the class chose a penguin, so the penguin sticker was the most popular.

- ④ There are 24 students in the class. How many students chose a sloth sticker?

$$\frac{1}{4} = \frac{6}{24}$$

6 students chose a sloth sticker.

Find the sum of the mixed numbers. Write your answer in lowest terms.

$$\text{Ex } 2\frac{1}{12} + 4\frac{2}{3} = 6\frac{3}{4}$$

1. Add the whole numbers.

$$2 + 4 = 6$$

2. Add the fractions (change to a common denominator if needed). Simplify.

$$\frac{1}{12} + \frac{2}{3} = \frac{1}{12} + \frac{8}{12} = \frac{9}{12} = \frac{3}{4}$$

3. Create a mixed number.

$$6\frac{3}{4}$$

$$\textcircled{1} 5\frac{3}{7} + 3\frac{2}{7} = 8\frac{5}{7}$$

$$5 + 3 = 8$$

$$\frac{3}{7} + \frac{2}{7} = \frac{5}{7}$$

$$\textcircled{2} 1\frac{7}{10} + 4\frac{1}{5} = 5\frac{9}{10}$$

$$1 + 4 = 5$$

$$\frac{7}{10} + \frac{1}{5} = \frac{7}{10} + \frac{2}{10} = \frac{9}{10}$$

$$\textcircled{3} 2\frac{1}{3} + 6\frac{1}{2} = 8\frac{5}{6}$$

$$2 + 6 = 8$$

$$\frac{1}{3} + \frac{1}{2} = \frac{2}{6} + \frac{3}{6} = \frac{5}{6}$$

$$\textcircled{4} 7\frac{2}{11} + 2\frac{2}{11} = 9\frac{4}{11}$$

$$7 + 2 = 9$$

$$\frac{2}{11} + \frac{2}{11} = \frac{4}{11}$$

$$\textcircled{5} 4\frac{3}{8} + 3\frac{4}{8} = 7\frac{7}{8}$$

$$4 + 3 = 7$$

$$\frac{3}{8} + \frac{4}{8} = \frac{7}{8}$$

$$\textcircled{6} 3\frac{1}{3} + 5\frac{2}{3} = 8\frac{7}{3}$$

$$3 + 5 = 8$$

$$\frac{1}{3} + \frac{2}{3} = \frac{3}{3} = 1$$

Find the sum of the mixed numbers using regrouping. Write your answer in lowest terms.

EX $3\frac{3}{10} + 5\frac{7}{10} = 9\frac{3}{10}$

1. Add the whole numbers.

$$3 + 5 = 8$$

2. Add the fractions (change to a common denominator if needed).

$$\frac{3}{10} + \frac{7}{10} = \frac{6}{10} + \frac{7}{10} = \frac{13}{10}$$

3. Change the improper fraction to a mixed number. Simplify if needed.

$$\frac{13}{10} = 1\frac{3}{10}$$

4. Add this to the whole number.

$$8 + 1\frac{3}{10} = 9\frac{3}{10}$$

① $4\frac{2}{3} + 2\frac{4}{5} = 7\frac{7}{15}$

$$4 + 2 = 6$$

$$\frac{2}{3} + \frac{4}{5} = \frac{10}{15} + \frac{12}{15} = \frac{22}{15} = 1\frac{7}{15}$$

$$6 + 1\frac{7}{15} = 7\frac{7}{15}$$

② $3\frac{7}{8} + 2\frac{5}{8} = 6\frac{1}{2}$

$$3 + 2 = 5$$

$$\frac{7}{8} + \frac{5}{8} = \frac{12}{8} = 1\frac{4}{8} = 1\frac{1}{2}$$

$$5 + 1\frac{1}{2} = 6\frac{1}{2}$$

③ $6\frac{5}{7} + 5\frac{1}{2} = 12\frac{3}{14}$

$$6 + 5 = 11$$

$$\frac{5}{7} + \frac{1}{2} = \frac{10}{14} + \frac{7}{14} = \frac{17}{14} = 1\frac{3}{14}$$

$$11 + 1\frac{3}{14} = 12\frac{3}{14}$$

④ $8\frac{7}{12} + 4\frac{5}{6} = 13\frac{5}{12}$

$$8 + 4 = 12$$

$$\frac{7}{12} + \frac{5}{6} = \frac{7}{12} + \frac{10}{12} = \frac{17}{12} = 1\frac{5}{12}$$

$$12 + 1\frac{5}{12} = 13\frac{5}{12}$$

⑤ $2\frac{10}{11} + 7\frac{5}{11} = 10\frac{4}{11}$

$$2 + 7 = 9$$

$$\frac{10}{11} + \frac{5}{11} = \frac{15}{11} = 1\frac{4}{11}$$

$$9 + 1\frac{4}{11} = 10\frac{4}{11}$$

⑥ $3\frac{2}{3} + 9\frac{3}{4} = 13\frac{5}{12}$

$$3 + 9 = 12$$

$$\frac{2}{3} + \frac{3}{4} = \frac{8}{12} + \frac{9}{12} = \frac{17}{12} = 1\frac{5}{12}$$

$$12 + 1\frac{5}{12} = 13\frac{5}{12}$$

Subtract the mixed numbers. Write your answer in lowest terms.

EX $6\frac{5}{6} - 3\frac{1}{3} = 3\frac{1}{2}$

1. Change the fractions so that they have a common denominator (if needed).

$$6\frac{5}{6} - 3\frac{1}{3} = 6\frac{5}{6} - 3\frac{2}{6}$$

2. Subtract the whole numbers.

$$6 - 3 = 3$$

3. Subtract the fractions. Simplify if needed.

$$\frac{5}{6} - \frac{2}{6} = \frac{3}{6} = \frac{1}{2}$$

4. Create a mixed number.

$$3\frac{1}{2}$$

① $7\frac{7}{12} - 5\frac{1}{4} = 2\frac{1}{3}$

$$7\frac{7}{12} - 5\frac{1}{4} = 7\frac{7}{12} - 5\frac{3}{12}$$

$$7 - 5 = 2$$

$$\frac{7}{12} - \frac{3}{12} = \frac{4}{12} = \frac{1}{3}$$

② $8\frac{9}{10} - 2\frac{4}{5} = 6\frac{1}{10}$

$$8\frac{9}{10} - 2\frac{4}{5} = 8\frac{9}{10} - 2\frac{8}{10}$$

$$8 - 2 = 6$$

$$\frac{9}{10} - \frac{8}{10} = \frac{1}{10}$$

③ $9\frac{8}{11} - 3\frac{1}{2} = 6\frac{5}{22}$

$$9\frac{8}{11} - 3\frac{1}{2} = 9\frac{16}{22} - 3\frac{11}{22}$$

$$9 - 3 = 6$$

$$\frac{16}{22} - \frac{11}{22} = \frac{5}{22}$$

④ $9\frac{8}{9} - 4\frac{5}{9} = 5\frac{1}{3}$

$$9 - 4 = 5$$

$$\frac{8}{9} - \frac{5}{9} = \frac{3}{9} = \frac{1}{3}$$

⑤ $4\frac{3}{4} - 2\frac{1}{8} = 2\frac{5}{8}$

$$4\frac{3}{4} - 2\frac{1}{8} = 4\frac{6}{8} - 2\frac{1}{8}$$

$$4 - 2 = 2$$

$$\frac{6}{8} - \frac{1}{8} = \frac{5}{8}$$

⑥ $11\frac{14}{15} - 5\frac{3}{5} = 6\frac{1}{3}$

$$11\frac{14}{15} - 5\frac{3}{5} = 11\frac{14}{15} - 5\frac{9}{15}$$

$$11 - 5 = 6$$

$$\frac{14}{15} - \frac{9}{15} = \frac{5}{15} = \frac{1}{3}$$

Find the difference between the mixed numbers using regrouping. Write your answer in lowest terms.

EX $7\frac{2}{5} - 4\frac{6}{5} = 2\frac{19}{35}$

1. Change the fractions so that they have a common denominator (if needed).

$$7\frac{2}{5} - 4\frac{6}{5} = 7\frac{14}{35} - 4\frac{42}{35}$$

2. Since the numerator of the first fraction is smaller than the numerator of the second fraction, regroup by borrowing from the whole number.

$$7\frac{14}{35} = 6 + \frac{35}{35} + \frac{14}{35} = 6\frac{49}{35}$$

3. Subtract the whole numbers from the two mixed numbers.

$$6 - 4 = 2$$

4. Subtract the fractions. Simplify if needed.

$$\frac{49}{35} - \frac{42}{35} = \frac{7}{35}$$

5. Create a mixed number.

$$2\frac{7}{35}$$

① $5\frac{1}{3} - 2\frac{5}{6} = 2\frac{1}{2}$

$$5\frac{1}{3} - 2\frac{5}{6} = 5\frac{2}{6} - 2\frac{5}{6}$$

$$5\frac{2}{6} = 4\frac{8}{6}$$

$$4\frac{8}{6} - 2\frac{5}{6} = 2\frac{3}{6} = 2\frac{1}{2}$$

③ $8\frac{3}{11} - 6\frac{10}{11} = 1\frac{4}{11}$

$$8\frac{3}{11} = 7\frac{14}{11}$$

$$7\frac{14}{11} - 6\frac{10}{11} = 1\frac{4}{11}$$

⑤ $4\frac{5}{12} - 1\frac{5}{6} = 2\frac{7}{12}$

$$4\frac{5}{12} - 1\frac{5}{6} = 4\frac{5}{12} - 1\frac{10}{12}$$

$$4\frac{5}{12} = 3\frac{17}{12}$$

$$3\frac{17}{12} - 1\frac{10}{12} = 2\frac{7}{12}$$

② $6\frac{3}{8} - 3\frac{3}{4} = 2\frac{5}{8}$

$$6\frac{3}{8} - 3\frac{3}{4} = 6\frac{3}{8} - 3\frac{6}{8}$$

$$6\frac{3}{8} = 5\frac{11}{8}$$

$$5\frac{11}{8} - 3\frac{6}{8} = 2\frac{5}{8}$$

④ $7\frac{1}{2} - 4\frac{7}{8} = 2\frac{13}{18}$

$$7\frac{1}{2} - 4\frac{7}{8} = 7\frac{4}{8} - 4\frac{7}{8}$$

$$7\frac{4}{8} = 6\frac{27}{8}$$

$$6\frac{27}{8} - 4\frac{7}{8} = 2\frac{13}{8}$$

⑥ $9\frac{2}{5} - 5\frac{2}{3} = 3\frac{11}{15}$

$$9\frac{2}{5} - 5\frac{2}{3} = 9\frac{6}{15} - 5\frac{10}{15}$$

$$9\frac{6}{15} = 8\frac{21}{15}$$

$$8\frac{21}{15} - 5\frac{10}{15} = 3\frac{11}{15}$$

Add or subtract the mixed numbers. Regroup where needed. Write your answer in lowest terms.

① $3\frac{1}{4} + 3\frac{3}{8} = 6\frac{5}{8}$

$$3\frac{1}{4} + 3\frac{3}{8} = 3\frac{2}{8} + 3\frac{3}{8} = 6\frac{5}{8}$$

② $5\frac{7}{8} - 4\frac{3}{8} = 1\frac{1}{2}$

$$5\frac{7}{8} - 4\frac{3}{8} = 1\frac{4}{8} = 1\frac{1}{2}$$

③ $6\frac{3}{4} + 4\frac{1}{2} = 11\frac{1}{4}$

$$6 + 4 = 10$$

$$\frac{3}{4} + \frac{1}{2} = \frac{3}{4} + \frac{2}{4} = \frac{5}{4} = 1\frac{1}{4}$$

$$10 + 1\frac{1}{4} = 11\frac{1}{4}$$

④ $7\frac{3}{5} - 1\frac{9}{10} = 5\frac{7}{10}$

$$7\frac{3}{5} - 1\frac{9}{10} = 7\frac{6}{10} - 1\frac{9}{10}$$

$$7\frac{6}{10} = 6\frac{16}{10}$$

$$6\frac{16}{10} - 1\frac{9}{10} = 5\frac{7}{10}$$

⑤ $5\frac{7}{9} + 2\frac{5}{9} = 8\frac{1}{3}$

$$5 + 2 = 7$$

$$\frac{7}{9} + \frac{5}{9} = \frac{12}{9} = 1\frac{3}{9} = 1\frac{1}{3}$$

$$7 + 1\frac{1}{3} = 8\frac{1}{3}$$

⑥ $4\frac{2}{3} - 1\frac{5}{8} = 3\frac{1}{24}$

$$4\frac{2}{3} - 1\frac{5}{8} = 4\frac{16}{24} - 1\frac{15}{24} = 3\frac{1}{24}$$

⑦ $2\frac{2}{3} + 7\frac{3}{4} = 10\frac{5}{12}$

$$2 + 7 = 9$$

$$\frac{2}{3} + \frac{3}{4} = \frac{8}{12} + \frac{9}{12} = \frac{17}{12} = 1\frac{5}{12}$$

$$9 + 1\frac{5}{12} = 10\frac{5}{12}$$

⑧ $9\frac{1}{6} - 5\frac{5}{12} = 3\frac{3}{4}$

$$9\frac{1}{6} - 5\frac{5}{12} = 9\frac{2}{12} - 5\frac{5}{12}$$

$$9\frac{2}{12} = 8\frac{14}{12}$$

$$8\frac{14}{12} - 5\frac{5}{12} = 3\frac{9}{12} = 3\frac{3}{4}$$

⑨ $1\frac{5}{6} + 6\frac{2}{3} = 8\frac{1}{6}$

$$1 + 6 = 7$$

$$\frac{5}{6} + \frac{2}{3} = \frac{5}{6} + \frac{4}{6} = \frac{9}{6} = 1\frac{1}{6}$$

$$7 + 1\frac{1}{6} = 8\frac{1}{6}$$

⑩ $7\frac{4}{5} - 1\frac{1}{3} = 6\frac{7}{15}$

$$7\frac{4}{5} - 1\frac{1}{3} = 7\frac{12}{15} - 1\frac{5}{15} = 6\frac{7}{15}$$


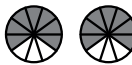


Add or subtract. Write your answer in lowest terms.

- ① $\frac{2}{5} + \frac{1}{3} = \frac{11}{15}$ ② $2\frac{1}{2} + 4\frac{2}{7} = 6\frac{11}{14}$
- ③ $\frac{9}{10} - \frac{3}{5} = \frac{3}{10}$ ④ $7\frac{8}{11} - 3\frac{1}{3} = 4\frac{13}{33}$
- ⑤ $\frac{3}{4} + \frac{2}{3} = \frac{17}{12} = 1\frac{5}{12}$ ⑥ $5\frac{3}{7} + 2\frac{2}{3} = 8\frac{2}{21}$
- ⑦ $\frac{8}{9} - \frac{5}{6} = \frac{2}{36} = \frac{1}{18}$ ⑧ $9\frac{4}{5} - 7\frac{3}{4} = 2\frac{1}{20}$
- ⑨ $\frac{4}{7} + \frac{2}{5} = \frac{34}{35}$ ⑩ $2\frac{1}{4} + 3\frac{5}{8} = 5\frac{7}{8}$
- ⑪ $\frac{11}{16} - \frac{3}{8} = \frac{5}{16}$ ⑫ $8\frac{5}{8} - 4\frac{1}{3} = 4\frac{2}{9}$
- ⑬ $\frac{3}{5} + \frac{5}{8} = \frac{49}{40} = 1\frac{9}{40}$ ⑭ $1\frac{3}{8} + 4\frac{1}{6} = 5\frac{13}{24}$
- ⑮ $\frac{13}{15} - \frac{4}{5} = \frac{1}{15}$ ⑯ $6\frac{2}{9} - 1\frac{3}{4} = 4\frac{17}{36}$
- ⑰ $\frac{3}{7} + \frac{3}{4} = \frac{33}{28} = 1\frac{5}{28}$ ⑱ $2\frac{7}{8} + 5\frac{5}{8} = 8\frac{4}{8} = 8\frac{1}{2}$
- ⑲ $\frac{9}{10} - \frac{2}{5} = \frac{5}{10} = \frac{1}{2}$ ⑳ $5\frac{1}{4} - 3\frac{2}{5} = 1\frac{17}{20}$

Add or subtract to answer each word problem involving mixed numbers.

- ① Mike bought two packages of chicken from the grocery store. One package contains $4\frac{3}{5}$ pounds of chicken and the other contains $5\frac{1}{4}$ pounds. What is the total weight of the chicken Mike purchased?
- $4\frac{3}{5} + 5\frac{1}{4} = 9\frac{17}{20}$ pounds of chicken
- ② A zookeeper measures one of the cheetahs under her care. The head and body of the cheetah are $48\frac{1}{2}$ inches long. The cheetah's tail is $27\frac{3}{4}$ inches long. What is the total length of the cheetah from its head to the end of its tail?
- $48\frac{1}{2} + 27\frac{3}{4} = 76\frac{1}{4}$ inches
- ③ Jack puts an empty plate onto a kitchen scale and sees that it weighs $1\frac{3}{10}$ pounds. Then, he puts a baked potato on the plate, and the scale gives a weight reading of $1\frac{4}{5}$ pounds. How much would the baked potato weigh alone?
- $1\frac{4}{5} - 1\frac{3}{10} = \frac{1}{2}$ pound
- ④ To the nearest tenth of an inch, Seattle received $40\frac{9}{10}$ inches of rain in 2022 and 35 inches of rain in 2023. How many more inches of rain did Seattle receive in 2022 than in 2023?
- $40\frac{9}{10} - 35 = 5\frac{9}{10}$ inches of rain

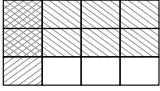
Multiply each whole number by a fraction. If your answer is an improper fraction, change it to a whole or mixed number in lowest terms.


- EX  $3 \times \frac{2}{3} = \frac{6}{3} = 2$ ①  $2 \times \frac{7}{10} = \frac{14}{10} = 1\frac{4}{10} = 1\frac{2}{5}$
- ②  $4 \times \frac{1}{2} = \frac{4}{2} = 2$ ③  $3 \times \frac{5}{6} = \frac{15}{6} = 2\frac{3}{6} = 2\frac{1}{2}$
- ④ $5 \times \frac{2}{7} = \frac{10}{7} = 1\frac{3}{7}$ ⑤ $6 \times \frac{3}{4} = \frac{18}{4} = 4\frac{2}{4} = 4\frac{1}{2}$
- ⑥ $4 \times \frac{3}{5} = \frac{12}{5} = 2\frac{2}{5}$ ⑦ $7 \times \frac{5}{8} = \frac{35}{8} = 4\frac{3}{8}$
- ⑧ $8 \times \frac{4}{9} = \frac{32}{9} = 3\frac{5}{9}$ ⑨ $2 \times \frac{7}{12} = \frac{14}{12} = 1\frac{2}{12} = 1\frac{1}{6}$
- ⑩ $5 \times \frac{3}{10} = \frac{15}{10} = 1\frac{5}{10} = 1\frac{1}{2}$ ⑪ $9 \times \frac{3}{7} = \frac{27}{7} = 3\frac{6}{7}$
- ⑫ $6 \times \frac{3}{8} = \frac{18}{8} = 2\frac{2}{8} = 2\frac{1}{4}$ ⑬ $4 \times \frac{5}{12} = \frac{20}{12} = 1\frac{8}{12} = 1\frac{2}{3}$

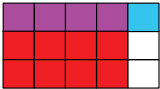
Multiply each pair of fractions. Write your answer in lowest terms.

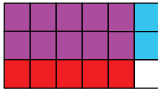
- EX $\frac{3}{5} \times \frac{2}{3} = \frac{6}{15} = \frac{2}{5}$ 1. Multiply the numerators.
2. Multiply the denominators.
3. Simplify.
- ① $\frac{1}{4} \times \frac{3}{5} = \frac{3}{20}$ ② $\frac{2}{9} \times \frac{3}{4} = \frac{6}{36} = \frac{1}{6}$
- ③ $\frac{4}{7} \times \frac{1}{4} = \frac{4}{28} = \frac{1}{7}$ ④ $\frac{7}{10} \times \frac{2}{5} = \frac{14}{50} = \frac{7}{25}$
- ⑤ $\frac{5}{8} \times \frac{6}{7} = \frac{30}{56} = \frac{15}{28}$ ⑥ $\frac{8}{9} \times \frac{1}{2} = \frac{8}{18} = \frac{4}{9}$
- ⑦ $\frac{9}{10} \times \frac{3}{4} = \frac{27}{40}$ ⑧ $\frac{4}{5} \times \frac{6}{11} = \frac{24}{55}$
- ⑨ $\frac{5}{9} \times \frac{7}{9} = \frac{35}{81}$ ⑩ $\frac{8}{11} \times \frac{3}{5} = \frac{24}{55}$
- ⑪ $\frac{2}{7} \times \frac{9}{10} = \frac{18}{70} = \frac{9}{35}$ ⑫ $\frac{4}{9} \times \frac{3}{7} = \frac{12}{63} = \frac{4}{21}$
- ⑬ $\frac{1}{6} \times \frac{2}{9} = \frac{2}{54} = \frac{1}{27}$ ⑭ $\frac{3}{8} \times \frac{2}{3} = \frac{6}{24} = \frac{1}{4}$

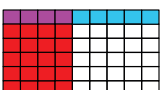
Complete the area model to multiply each pair of fractions. Write your answer in lowest terms.


EX 
 $\frac{1}{4} \times \frac{2}{3} = \frac{2}{12} = \frac{1}{6}$


① 
 $\frac{2}{5} \times \frac{3}{4} = \frac{6}{20} = \frac{3}{10}$

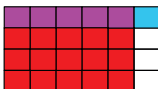
② 
 $\frac{4}{5} \times \frac{1}{3} = \frac{4}{15}$

③ 
 $\frac{5}{6} \times \frac{2}{3} = \frac{10}{18} = \frac{5}{9}$

④ 
 $\frac{4}{9} \times \frac{1}{6} = \frac{4}{54} = \frac{2}{27}$

⑤ 
 $\frac{3}{8} \times \frac{2}{5} = \frac{6}{40} = \frac{3}{20}$

⑥ 
 $\frac{4}{7} \times \frac{1}{2} = \frac{4}{14} = \frac{2}{7}$

⑦ 
 $\frac{5}{8} \times \frac{1}{4} = \frac{5}{32}$

Fill in the blanks to complete each multiplication equation.

EX $\frac{1}{5} \times \frac{4}{7} = \frac{4}{35}$

① $\frac{2}{3} \times \frac{2}{9} = \frac{4}{27}$

② $\frac{5}{9} \times \frac{1}{2} = \frac{5}{18}$

③ $\frac{3}{4} \times \frac{3}{8} = \frac{9}{32}$

④ $\frac{5}{8} \times \frac{3}{2} = \frac{15}{16}$

⑤ $\frac{1}{3} \times \frac{2}{7} = \frac{2}{21}$

⑥ $\frac{2}{3} \times \frac{2}{5} = \frac{4}{15}$

⑦ $\frac{3}{5} \times \frac{7}{8} = \frac{21}{40}$

⑧ $\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$

⑨ $\frac{4}{5} \times \frac{7}{9} = \frac{28}{45}$

⑩ $\frac{7}{10} \times \frac{3}{5} = \frac{21}{50}$

⑪ $\frac{5}{12} \times \frac{5}{6} = \frac{25}{72}$

⑫ $\frac{2}{3} \times \frac{5}{7} = \frac{10}{21}$

⑬ $\frac{3}{8} \times \frac{5}{4} = \frac{15}{32}$

⑭ $\frac{3}{7} \times \frac{9}{10} = \frac{27}{70}$

⑮ $\frac{2}{3} \times \frac{13}{15} = \frac{26}{45}$

Multiply each mixed number by a whole number. Write your answer as a whole or mixed number in lowest terms.

EX $3\frac{2}{3} \times 5 = \frac{18}{3} + \frac{10}{3} = \frac{28}{3} = 9\frac{1}{3}$
 1. Change the mixed number to an improper fraction.
 2. Multiply the whole number by the numerator.
 3. Simplify.

① $4\frac{1}{4} \times 2 = \frac{17}{4} \times 2 = \frac{34}{4} = 8\frac{2}{4} = 8\frac{1}{2}$

② $6 \times 1\frac{9}{10} = \frac{69}{10} = 6\frac{9}{10}$

③ $5\frac{1}{2} \times 8 = \frac{11}{2} \times 8 = \frac{88}{2} = 44$

④ $7 \times 2\frac{3}{5} = \frac{18}{5} \times 7 = \frac{126}{5} = 25\frac{1}{5}$

Multiply each mixed number by a fraction. Write your answer in lowest terms.

EX $2\frac{3}{4} \times \frac{3}{8} = \frac{15}{4} \times \frac{3}{8} = \frac{45}{32} = 1\frac{13}{32}$
 1. Change the mixed number to an improper fraction.
 2. Multiply the numerators.
 3. Multiply the denominators.
 4. Simplify.

⑤ $3\frac{2}{5} \times \frac{7}{9} = \frac{17}{5} \times \frac{7}{9} = \frac{119}{45} = 2\frac{29}{45}$

⑥ $\frac{5}{6} \times 4\frac{1}{3} = \frac{5}{6} \times \frac{13}{3} = \frac{65}{18} = 3\frac{11}{18}$

⑦ $1\frac{7}{8} \times \frac{2}{3} = \frac{15}{8} \times \frac{2}{3} = \frac{30}{24} = 1\frac{6}{24} = 1\frac{1}{4}$

⑧ $\frac{1}{2} \times 5\frac{2}{5} = \frac{1}{2} \times \frac{27}{5} = \frac{27}{10} = 2\frac{7}{10}$

Multiply each pair of mixed numbers. Write your answer as a whole or mixed number in lowest terms.

EX $2\frac{1}{2} \times 4\frac{3}{4} = \frac{5}{2} \times \frac{19}{4} = \frac{95}{8} = 11\frac{7}{8}$
 1. Change both mixed numbers to improper fractions.
 2. Multiply the numerators.
 3. Multiply the denominators.
 4. Simplify.

① $5\frac{2}{3} \times 3\frac{1}{6} = \frac{17}{3} \times \frac{19}{6} = \frac{323}{18} = 17\frac{17}{18}$

② $7\frac{1}{3} \times 2\frac{1}{4} = \frac{22}{3} \times \frac{9}{4} = \frac{198}{12} = 16\frac{6}{12} = 16\frac{1}{2}$

③ $1\frac{5}{8} \times 4\frac{3}{5} = \frac{13}{8} \times \frac{23}{5} = \frac{299}{40} = 7\frac{19}{40}$

④ $6\frac{2}{5} \times 3\frac{1}{10} = \frac{32}{5} \times \frac{31}{10} = \frac{992}{50} = 19\frac{42}{50} = 19\frac{21}{25}$

Multiply. Write your answer as a whole or mixed number in lowest terms.

⑤ $7\frac{1}{3} \times 5 = \frac{22}{3} \times 5 = \frac{110}{3} = 36\frac{2}{3}$

⑥ $8 \times 2\frac{7}{10} = 8 \times \frac{27}{10} = \frac{216}{10} = 21\frac{6}{10} = 21\frac{3}{5}$

⑦ $1\frac{2}{3} \times \frac{3}{4} = \frac{5}{3} \times \frac{3}{4} = \frac{15}{12} = 1\frac{1}{4}$

⑧ $\frac{8}{9} \times 3\frac{5}{6} = \frac{8}{9} \times \frac{23}{6} = \frac{184}{54} = 3\frac{22}{54} = 3\frac{11}{27}$

⑨ $4\frac{1}{2} \times 6\frac{1}{5} = \frac{9}{2} \times \frac{31}{5} = \frac{279}{10} = 27\frac{9}{10}$

⑩ $9\frac{3}{4} \times 1\frac{1}{10} = \frac{39}{4} \times \frac{11}{10} = \frac{429}{40} = 10\frac{29}{40}$

Fill in the blanks with "greater than," "less than," or "equal to" to complete each sentence.

- Multiplying any factor by 1 will result in a product that is **equal to** the first factor.
- Multiplying any factor by a number less than 1 will result in a product that is **less than** the first factor.
- Multiplying any factor by a number greater than 1 will result in a product that is **greater than** the first factor.

Compare each pair of expressions using $>$, $<$, or $=$.

- EX $1\frac{2}{3} \times \frac{3}{4} < 1\frac{2}{3}$ 4 $\frac{6}{7} \times 1 = \frac{6}{7}$ 5 $12 \times \frac{3}{2} > 12$
- 6 $2\frac{1}{2} \times \frac{5}{3} > 2\frac{1}{2}$ 7 $\frac{3}{5} \times 3 > \frac{3}{5}$ 8 $4 \times \frac{7}{8} < 4$
- 9 $5\frac{1}{8} \times \frac{4}{3} > 5\frac{1}{8}$ 10 $\frac{6}{5} \times 7 > \frac{6}{5}$ 11 $6 \times \frac{9}{10} < 6$
- 12 $8\frac{11}{12} \times \frac{4}{7} < 8\frac{11}{12}$ 13 $\frac{16}{15} \times 1 = \frac{16}{15}$ 14 $9 \times \frac{5}{8} < 9$

Multiply. Write your answer in lowest terms.

- $4 \times \frac{2}{11} = \frac{8}{11}$
- $8 \times \frac{5}{6} = \frac{40}{6} = 6\frac{4}{6} = 6\frac{2}{3}$
- $\frac{7}{8} \times \frac{3}{4} = \frac{21}{32}$
- $\frac{1}{2} \times \frac{4}{5} = \frac{4}{10} = \frac{2}{5}$
- $3\frac{1}{3} \times 5 = \frac{50}{3} = 16\frac{2}{3}$
- $6\frac{3}{8} \times 2 = \frac{102}{8} = 12\frac{6}{8} = 12\frac{3}{4}$
- $1\frac{3}{10} \times \frac{5}{6} = \frac{65}{60} = 1\frac{5}{60} = 1\frac{1}{12}$
- $2\frac{4}{5} \times \frac{2}{9} = \frac{28}{45}$
- $4\frac{1}{4} \times 3\frac{2}{5} = \frac{289}{20} = 14\frac{9}{20}$
- $5\frac{2}{3} \times 2\frac{3}{4} = \frac{187}{12} = 15\frac{7}{12}$

Multiply to solve each word problem.

- A recipe calls for $2\frac{1}{4}$ cups of flour to make a batch of muffins. Mia wants to make 3 batches of muffins. How much flour does she need?

$$2\frac{1}{4} \times 3 = 6\frac{3}{4} \text{ cups of flour}$$

- $\frac{3}{7}$ of the students in a class are boys. $\frac{2}{3}$ of the boys have brown eyes. What fraction of the total number of students in the class are boys with brown eyes?

$$\frac{3}{7} \times \frac{2}{3} = \frac{6}{21} = \frac{2}{7} \text{ of the students are boys with brown eyes}$$

To divide with fractions, you will need to be able to find the **reciprocal** of a number. To find the reciprocal of a fraction, switch the numerator and denominator.

EX The reciprocal of $\frac{2}{3}$ is $\frac{3}{2}$


The reciprocal of a whole number uses 1 as the numerator.

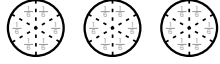
EX The reciprocal of 8 is $\frac{1}{8}$

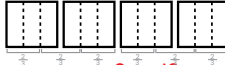
Find the reciprocal of each number.

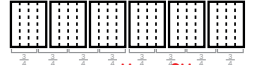
- The reciprocal of $\frac{3}{4}$ is $\frac{4}{3}$
- The reciprocal of 3 is $\frac{1}{3}$
- The reciprocal of $\frac{5}{8}$ is $\frac{8}{5}$
- The reciprocal of 2 is $\frac{1}{2}$
- The reciprocal of $\frac{3}{2}$ is $\frac{2}{3}$
- The reciprocal of 5 is $\frac{1}{5}$
- The reciprocal of $\frac{1}{4}$ is $\frac{4}{1}$ or 4
- The reciprocal of $\frac{5}{8}$ is $\frac{8}{5}$
- The reciprocal of $\frac{4}{9}$ is $\frac{9}{4}$
- The reciprocal of $\frac{7}{2}$ is $\frac{2}{7}$
- The reciprocal of $\frac{1}{9}$ is $\frac{9}{1}$ or 9
- The reciprocal of 10 is $\frac{1}{10}$
- The reciprocal of $\frac{7}{8}$ is $\frac{8}{7}$
- The reciprocal of $\frac{13}{15}$ is $\frac{15}{13}$
- The reciprocal of $\frac{5}{9}$ is $\frac{9}{5}$
- The reciprocal of $\frac{1}{6}$ is $\frac{6}{1}$ or 6

Divide each whole number by a fraction by multiplying by the reciprocal. If your answer is an improper fraction, change it to a whole or mixed number in lowest terms.

EX 
 $3 \div \frac{1}{3} = 3 \times \frac{3}{1} = 9$

1 
 $3 \div \frac{1}{6} = 3 \times \frac{6}{1} = 18$

2 
 $4 \div \frac{2}{3} = 4 \times \frac{3}{2} = \frac{12}{2} = 6$

3 
 $6 \div \frac{3}{4} = 6 \times \frac{4}{3} = \frac{24}{3} = 8$

4 $5 \div \frac{1}{4} = 5 \times \frac{4}{1} = 20$

5 $2 \div \frac{1}{5} = 2 \times \frac{5}{1} = 10$

6 $4 \div \frac{3}{8} = 4 \times \frac{8}{3} = \frac{32}{3} = 10\frac{2}{3}$

7 $9 \div \frac{3}{4} = 9 \times \frac{4}{3} = \frac{36}{3} = 12$

8 $8 \div \frac{1}{6} = 8 \times \frac{6}{1} = 48$

9 $5 \div \frac{5}{9} = 5 \times \frac{9}{5} = \frac{45}{5} = 9$

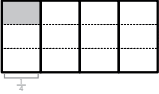
10 $7 \div \frac{1}{3} = 7 \times \frac{3}{1} = 21$


11 $3 \div \frac{1}{2} = 3 \times \frac{2}{1} = 6$

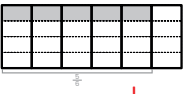
12 $6 \div \frac{2}{3} = 6 \times \frac{3}{2} = \frac{18}{2} = 9$

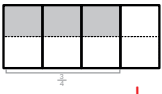
13 $10 \div \frac{2}{5} = 10 \times \frac{5}{2} = \frac{50}{2} = 25$

Divide each fraction by a whole number by multiplying by the reciprocal. Write your answer in lowest terms.

EX 
 $\frac{1}{4} \div 3 = \frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$

① 
 $\frac{1}{5} \div 2 = \frac{1}{5} \times \frac{1}{2} = \frac{1}{10}$

② 
 $\frac{5}{6} \div 4 = \frac{5}{6} \times \frac{1}{4} = \frac{5}{24}$

③ 
 $\frac{3}{4} \div 2 = \frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$

④ $\frac{1}{2} \div 6 = \frac{1}{2} \times \frac{1}{6} = \frac{1}{12}$

⑤ $\frac{1}{6} \div 5 = \frac{1}{6} \times \frac{1}{5} = \frac{1}{30}$

⑥ $\frac{3}{5} \div 2 = \frac{3}{5} \times \frac{1}{2} = \frac{3}{10}$

⑦ $\frac{2}{7} \div 4 = \frac{2}{7} \times \frac{1}{4} = \frac{2}{28} = \frac{1}{14}$

⑧ $\frac{3}{8} \div 6 = \frac{3}{8} \times \frac{1}{6} = \frac{3}{48} = \frac{1}{16}$

⑨ $\frac{4}{9} \div 3 = \frac{4}{9} \times \frac{1}{3} = \frac{4}{27}$

⑩ $\frac{5}{7} \div 2 = \frac{5}{7} \times \frac{1}{2} = \frac{5}{14}$

⑪ $\frac{2}{3} \div 5 = \frac{2}{3} \times \frac{1}{5} = \frac{2}{15}$

⑫ $\frac{4}{5} \div 8 = \frac{4}{5} \times \frac{1}{8} = \frac{4}{40} = \frac{1}{10}$

⑬ $\frac{1}{3} \div 9 = \frac{1}{3} \times \frac{1}{9} = \frac{1}{27}$

Divide each pair of fractions by multiplying by the reciprocal of the second fraction. Express your answer as a fraction or mixed number in lowest terms.

EX $\frac{1}{2} \div \frac{2}{3} = \frac{1}{2} \times \frac{3}{2} = \frac{3}{4}$

① $\frac{3}{4} \div \frac{5}{6} = \frac{3}{4} \times \frac{6}{5} = \frac{18}{20} = \frac{9}{10}$

② $\frac{1}{4} \div \frac{3}{8} = \frac{1}{4} \times \frac{8}{3} = \frac{8}{12} = \frac{2}{3}$

③ $\frac{1}{3} \div \frac{2}{5} = \frac{1}{3} \times \frac{5}{2} = \frac{5}{6}$

④ $\frac{3}{5} \div \frac{1}{2} = \frac{3}{5} \times \frac{2}{1} = \frac{6}{5} = 1\frac{1}{5}$

⑤ $\frac{4}{5} \div \frac{2}{3} = \frac{4}{5} \times \frac{3}{2} = \frac{12}{10} = 1\frac{2}{10} = 1\frac{1}{5}$

⑥ $\frac{1}{6} \div \frac{1}{4} = \frac{1}{6} \times \frac{4}{1} = \frac{4}{6} = \frac{2}{3}$

⑦ $\frac{5}{6} \div \frac{1}{3} = \frac{5}{6} \times \frac{3}{1} = \frac{15}{6} = 2\frac{3}{6} = 2\frac{1}{2}$

⑧ $\frac{2}{7} \div \frac{3}{4} = \frac{2}{7} \times \frac{4}{3} = \frac{8}{21}$

⑨ $\frac{4}{9} \div \frac{2}{5} = \frac{4}{9} \times \frac{5}{2} = \frac{20}{18} = 1\frac{2}{18} = 1\frac{1}{9}$

⑩ $\frac{5}{8} \div \frac{1}{6} = \frac{5}{8} \times \frac{6}{1} = \frac{30}{8} = 3\frac{6}{8} = 3\frac{3}{4}$

⑪ $\frac{2}{3} \div \frac{8}{9} = \frac{2}{3} \times \frac{9}{8} = \frac{18}{24} = \frac{3}{4}$

⑫ $\frac{1}{8} \div \frac{2}{5} = \frac{1}{8} \times \frac{5}{2} = \frac{5}{16}$

⑬ $\frac{3}{7} \div \frac{3}{4} = \frac{3}{7} \times \frac{4}{3} = \frac{12}{21} = \frac{4}{7}$

⑭ $\frac{5}{9} \div \frac{1}{2} = \frac{5}{9} \times \frac{2}{1} = \frac{10}{9} = 1\frac{1}{9}$

⑮ $\frac{3}{8} \div \frac{7}{9} = \frac{3}{8} \times \frac{9}{7} = \frac{27}{56}$

Divide each pair of mixed numbers. Express your answer as a fraction or mixed number in lowest terms.

EX $2\frac{3}{5} \div 1\frac{1}{2} = 1\frac{11}{15}$
 1. Before dividing, change any mixed numbers to improper fractions.

$$2\frac{3}{5} = \frac{13}{5} \quad 1\frac{1}{2} = \frac{3}{2}$$

2. Divide by multiplying the first fraction by the reciprocal of the second fraction.

$$\frac{13}{5} \div \frac{3}{2} = \frac{13}{5} \times \frac{2}{3} = \frac{26}{15}$$

3. If needed, change the answer into a mixed number and simplify.

$$\frac{26}{15} = 1\frac{11}{15}$$

① $4\frac{1}{3} \div 2\frac{5}{8} = 1\frac{41}{63}$

$$\frac{13}{3} \div \frac{21}{8} =$$

$$\frac{13}{3} \times \frac{8}{21} = \frac{104}{63} = 1\frac{41}{63}$$

③ $3\frac{1}{2} \div 2\frac{3}{4} = 1\frac{3}{11}$

$$\frac{7}{2} \div \frac{11}{4} =$$

$$\frac{7}{2} \times \frac{4}{11} = \frac{28}{22} = 1\frac{6}{22} = 1\frac{3}{11}$$

⑤ $2\frac{5}{12} \div 2\frac{1}{4} = 1\frac{2}{27}$

$$\frac{29}{12} \div \frac{9}{4} =$$

$$\frac{29}{12} \times \frac{4}{9} = \frac{116}{108} = 1\frac{8}{108} = 1\frac{2}{27}$$

② $3\frac{5}{8} \div 1\frac{2}{3} = 2\frac{2}{15}$

$$\frac{32}{8} \div \frac{5}{3} =$$

$$\frac{32}{8} \times \frac{3}{5} = \frac{96}{40} = 2\frac{16}{40} = 2\frac{2}{5}$$

④ $4\frac{2}{5} \div 1\frac{4}{8} = 3\frac{3}{65}$

$$\frac{22}{5} \div \frac{13}{8} =$$

$$\frac{22}{5} \times \frac{8}{13} = \frac{176}{65} = 3\frac{3}{65}$$

⑥ $5\frac{1}{3} \div 3\frac{8}{9} = 1\frac{13}{27}$

$$\frac{16}{3} \div \frac{18}{9} =$$

$$\frac{16}{3} \times \frac{5}{18} = \frac{80}{54} = 1\frac{26}{54} = 1\frac{13}{27}$$

Divide. Express your answer as a fraction or mixed number in lowest terms.

① $4 \div \frac{3}{8} = 10\frac{2}{3}$

$$\frac{4}{1} \times \frac{8}{3} = \frac{32}{3} = 10\frac{2}{3}$$

② $\frac{5}{12} \div 3 = \frac{5}{36}$

$$\frac{5}{12} \times \frac{1}{3} = \frac{5}{36}$$

③ $\frac{4}{7} \div \frac{5}{8} = \frac{24}{35}$

$$\frac{4}{7} \times \frac{8}{5} = \frac{24}{35}$$

④ $4\frac{2}{5} \div 1\frac{4}{9} = 2\frac{4}{9}$

$$\frac{22}{5} \div \frac{13}{9} =$$

$$\frac{22}{5} \times \frac{9}{13} = \frac{198}{65} = 2\frac{48}{65} = 2\frac{4}{9}$$

⑤ $6 \div 2\frac{1}{4} = 2\frac{2}{3}$

$$\frac{6}{1} \div \frac{9}{4} =$$

$$\frac{6}{1} \times \frac{4}{9} = \frac{24}{9} = 2\frac{6}{9} = 2\frac{2}{3}$$

⑥ $\frac{7}{9} \div 3 = \frac{7}{27}$

$$\frac{7}{9} \times \frac{1}{3} = \frac{7}{27}$$

⑦ $5 \div \frac{7}{8} = 5\frac{5}{7}$

$$\frac{5}{1} \times \frac{8}{7} = \frac{40}{7} = 5\frac{5}{7}$$

⑧ $\frac{11}{12} \div \frac{2}{5} = 2\frac{7}{24}$

$$\frac{11}{12} \times \frac{5}{2} = \frac{55}{24} = 2\frac{7}{24}$$

⑨ $4\frac{7}{8} \div 1\frac{2}{3} = 2\frac{37}{40}$

$$\frac{39}{8} \div \frac{5}{3} =$$

$$\frac{39}{8} \times \frac{3}{5} = \frac{117}{40} = 2\frac{37}{40}$$

⑩ $5 \div 3\frac{1}{2} = 1\frac{3}{7}$

$$\frac{5}{1} \div \frac{7}{2} =$$

$$\frac{5}{1} \times \frac{2}{7} = \frac{10}{7} = 1\frac{3}{7}$$

For each number, write the digits in the correct columns in the place value chart. Some columns may be empty for some numbers.

	Hundreds	Tens	Ones	Tenths	Hundredths	Thousandths
① 31.476		3	1	4	7	6
② 103.6	1	0	3	6		
③ 5.79			5	7	9	

Write the value of the underlined digit in each number.

EX) 6. <u>1</u> 91	<u>0.09</u>	④ 43.7 <u>4</u> 6	<u>0.7</u>
⑤ <u>8</u> .473	<u>8</u>	⑥ 19.25 <u>4</u>	<u>0.004</u>
⑦ 0.30 <u>5</u>	<u>0.005</u>	⑧ 6 <u>7</u> 8.53	<u>70</u>
⑨ 489.6 <u>1</u> 8	<u>0.01</u>	⑩ 5. <u>6</u> 39	<u>0.6</u>

Fill in the blanks with the correct numbers.

- ⑪ In 248.563, the digit 5 is in the tenths place.
 ⑫ In 821.047 the digit 7 is in the thousandths place.
 ⑬ In 318.06, the digit 1 is in the tens place.
 ⑭ In 839.751, the digit 5 is in the hundredths place.

Circle the number in each pair in which the digit 7 has a **greater** value.

① <u>32.786</u>	34.097	② 0.576	<u>5.76</u>
③ 47.153	<u>70.98</u>	④ 52.764	<u>47.328</u>
⑤ <u>6.075</u>	8.007	⑥ <u>174.5</u>	2.765

Compare each pair of decimals using > or <.

- EX) 0.03 < 0.2 ⑦ 0.49 > 0.325 ⑧ 1.67 < 1.9
 ⑨ 27.3 > 2.73 ⑩ 9.03 < 9.3 ⑪ 14.9 < 15.8
 ⑫ 7.01 > 7.001 ⑬ 52.7 > 52.08 ⑭ 9.35 < 9.6

Rewrite each set of numbers in order from least to greatest.

- ⑬ 1.23 , 12.3 , 0.123 , 123 0.123 , 1.23 , 12.3 , 123
 ⑮ 0.48 , 0.048 , 0.84 , 0.084 0.048 , 0.084 , 0.48 , 0.84
 ⑰ 5.06 , 5.6 , 5.66 , 5.606 5.06 , 5.6 , 5.606 , 5.66
 ⑱ 7.654 , 7.456 , 7.564 , 7.645 7.456 , 7.564 , 7.645 , 7.654

Write each number in standard form.

- EX) Fifty-seven and sixty-three hundredths 57.63
 ① One hundred two and four tenths 102.4
 ② Four and nine hundred thirty-one thousandths 4.931
 ③ Sixteen and eight hundredths 16.08
 ④ Six hundred twenty-three thousandths 0.623

Write the name of each number.

- EX) 2.57 Two and fifty-seven hundredths
 ⑤ 15.235 Fifteen and two hundred thirty-five thousandths
 ⑥ 43.79 Forty-three and seventy-nine hundredths
 ⑦ 17.03 Seventeen and three hundredths
 ⑧ 723.5 Seven hundred twenty-three and five tenths

Write each number in expanded form.

- EX) 32.68 30 + 2 + 0.6 + 0.08
 ⑨ 426.7 400 + 20 + 6 + 0.7
 ⑩ 0.978 0.9 + 0.07 + 0.008
 ⑪ 5.264 5 + 0.2 + 0.06 + 0.004

Fill in the chart to round each number to the given place value.

314.794	
Hundred	300
Ten	310
One	315
Tenth	314.8
Hundredth	314.79

1,249.816	
Hundred	1,200
Ten	1,250
One	1,250
Tenth	1,249.8
Hundredth	1,249.82

853.179	
Hundred	900
Ten	850
One	853
Tenth	853.2
Hundredth	853.18

94.352	
Hundred	100
Ten	90
One	94
Tenth	94.4
Hundredth	94.35

6,285.143	
Hundred	6,300
Ten	6,290
One	6,285
Tenth	6,285.1
Hundredth	6,285.14

712.528	
Hundred	700
Ten	710
One	713
Tenth	712.5
Hundredth	712.53

Rewrite each decimal as a fraction in lowest terms.

EX $0.26 = \frac{26}{100} = \frac{13}{50}$

① $0.8 = \frac{8}{10} = \frac{4}{5}$

② $0.325 = \frac{325}{1,000} = \frac{13}{40}$

③ $0.15 = \frac{15}{100} = \frac{3}{20}$

④ $0.7 = \frac{7}{10}$

⑤ $0.05 = \frac{5}{100} = \frac{1}{20}$

⑥ $0.846 = \frac{846}{1,000} = \frac{423}{500}$

⑦ $0.75 = \frac{75}{100} = \frac{3}{4}$

⑧ $0.004 = \frac{4}{1,000} = \frac{1}{250}$

⑨ $0.6 = \frac{6}{10} = \frac{3}{5}$

⑩ $0.27 = \frac{27}{100}$

⑪ $0.48 = \frac{48}{100} = \frac{12}{25}$

- ⑫ 0.55 of the students in a school are boys. What fraction of the students are boys (in lowest terms)?

$\frac{55}{100} = \frac{11}{20}$ of the students are boys

- ⑬ Gina walked 0.4 miles to her friend's house. What fraction of a mile did she walk?

$\frac{4}{10} = \frac{2}{5}$ of a mile

Rewrite each decimal as a mixed number in lowest terms.

EX $3.25 = 3 \frac{25}{100} = 3 \frac{1}{4}$

① $14.5 = 14 \frac{5}{10} = 14 \frac{1}{2}$

② $2.125 = 2 \frac{125}{1,000} = 2 \frac{1}{8}$

③ $7.96 = 7 \frac{96}{100} = 7 \frac{24}{25}$

④ $10.3 = 10 \frac{3}{10}$

⑤ $6.08 = 6 \frac{8}{100} = 6 \frac{2}{25}$

⑥ $1.508 = 1 \frac{508}{1,000} = 1 \frac{127}{250}$

⑦ $21.2 = 21 \frac{2}{10} = 21 \frac{1}{5}$

⑧ $5.005 = 5 \frac{5}{1,000} = 5 \frac{1}{200}$

⑨ $9.36 = 9 \frac{36}{100} = 9 \frac{9}{25}$

⑩ $3.85 = 3 \frac{85}{100} = 3 \frac{17}{20}$

⑪ $201.7 = 201 \frac{7}{10}$

- ⑫ Kyle weighs 81.75 pounds. What is his weight expressed as a mixed number in lowest terms?

$81 \frac{75}{100} = 81 \frac{3}{4}$ pounds

- ⑬ It takes the Moon 27.322 days to orbit Earth. What is the number of days expressed as a mixed number in lowest terms?

$27 \frac{322}{1,000} = 27 \frac{161}{500}$ days

Rewrite each fraction as a decimal.

EX $\frac{637}{1,000} = 0.637$

① $\frac{89}{100} = 0.89$

② $\frac{9}{10} = 0.9$

③ $\frac{21}{100} = 0.21$

④ $\frac{153}{1,000} = 0.153$

⑤ $\frac{1}{10} = 0.1$

⑥ $\frac{7}{100} = 0.07$

⑦ $\frac{19}{1,000} = 0.019$

⑧ $\frac{41}{100} = 0.41$

⑨ $\frac{3}{1,000} = 0.003$

Rewrite each mixed number as a decimal.

EX $48 \frac{73}{100} = 48.73$

⑩ $16 \frac{91}{100} = 16.91$

⑪ $8 \frac{397}{1,000} = 8.397$

⑫ $81 \frac{7}{10} = 81.7$

⑬ $59 \frac{1}{100} = 59.01$

⑭ $141 \frac{37}{100} = 141.37$

⑮ $3 \frac{71}{1,000} = 3.071$

⑯ $23 \frac{9}{1,000} = 23.009$

Change each fraction to an equivalent fraction with a denominator of 10, 100, or 1,000. Then, rewrite the fraction as a decimal.

EX $\frac{19}{20} = \frac{95}{100} = 0.95$

① $\frac{1}{2} = \frac{5}{10} = 0.5$

② $\frac{3}{4} = \frac{75}{100} = 0.75$

③ $\frac{5}{8} = \frac{625}{1,000} = 0.625$

④ $\frac{2}{5} = \frac{4}{10} = 0.4$

⑤ $\frac{1}{4} = \frac{25}{100} = 0.25$

⑥ $\frac{43}{50} = \frac{86}{100} = 0.86$

⑦ $\frac{239}{500} = \frac{478}{1,000} = 0.478$

Change each mixed number to one with an equivalent fraction that has a denominator of 10, 100, or 1,000. Then, rewrite the mixed number as a decimal.

EX $8 \frac{14}{25} = 8 \frac{56}{100} = 8.56$

⑧ $2 \frac{11}{20} = 2 \frac{55}{100} = 2.55$

⑨ $5 \frac{4}{5} = 5 \frac{8}{10} = 5.8$

⑩ $1 \frac{231}{250} = 1 \frac{924}{1,000} = 1.924$

⑪ $9 \frac{7}{25} = 9 \frac{28}{100} = 9.28$

⑫ $3 \frac{33}{40} = 3 \frac{825}{1,000} = 3.825$

⑬ $7 \frac{41}{50} = 7 \frac{82}{100} = 7.82$

⑭ $4 \frac{2}{125} = 4 \frac{16}{1,000} = 4.016$

Find each sum.

$$\begin{array}{r} \text{EX } 5.092 \\ +2.55 \\ \hline 7.642 \end{array}$$

$$\textcircled{1} \begin{array}{r} 7.23 \\ +1.465 \\ \hline 8.695 \end{array}$$

$$\textcircled{2} \begin{array}{r} 6.182 \\ +0.706 \\ \hline 6.888 \end{array}$$

$$\textcircled{3} \begin{array}{r} 4.331 \\ +2.9 \\ \hline 7.231 \end{array}$$

$$\textcircled{4} \begin{array}{r} 0.861 \\ +0.073 \\ \hline 0.934 \end{array}$$

$$\textcircled{5} \begin{array}{r} 5.1 \\ +6.325 \\ \hline 11.425 \end{array}$$

$$\textcircled{6} \begin{array}{r} 2.946 \\ +3.15 \\ \hline 6.096 \end{array}$$

$$\textcircled{7} \begin{array}{r} 3.708 \\ +4.21 \\ \hline 7.918 \end{array}$$

$$\textcircled{8} \begin{array}{r} 12.37 \\ +4.27 \\ \hline 16.64 \end{array}$$

$$\textcircled{9} \begin{array}{r} 8.415 \\ +1.507 \\ \hline 9.922 \end{array}$$

$$\textcircled{10} \begin{array}{r} 36.02 \\ +11.93 \\ \hline 47.95 \end{array}$$

$$\textcircled{11} \begin{array}{r} 4.78 \\ +3.569 \\ \hline 8.349 \end{array}$$

$$\textcircled{12} 18.7 + 2.45 = \underline{21.15}$$

$$\textcircled{13} 5.08 + 19.736 = \underline{24.816}$$

$$\textcircled{14} 6.013 + 3.87 = \underline{9.883}$$

$$\textcircled{15} 10.98 + 2.15 = \underline{13.13}$$

$$\textcircled{16} 14.81 + 0.96 = \underline{15.77}$$

$$\textcircled{17} 102.17 + 37.2 = \underline{139.37}$$

Find each difference.

$$\text{EX } \begin{array}{r} 7.831 \\ -5.22 \\ \hline 2.611 \end{array}$$

$$\textcircled{1} \begin{array}{r} 9.735 \\ -6.504 \\ \hline 3.231 \end{array}$$

$$\textcircled{2} \begin{array}{r} 8.625 \\ -7.43 \\ \hline 1.195 \end{array}$$

$$\textcircled{3} \begin{array}{r} 6.38 \\ -0.151 \\ \hline 6.229 \end{array}$$

$$\textcircled{4} \begin{array}{r} 5.028 \\ -0.316 \\ \hline 4.712 \end{array}$$

$$\textcircled{5} \begin{array}{r} 4.708 \\ -2.56 \\ \hline 2.148 \end{array}$$

$$\textcircled{6} \begin{array}{r} 7.15 \\ -1.422 \\ \hline 5.728 \end{array}$$

$$\textcircled{7} \begin{array}{r} 3.829 \\ -0.235 \\ \hline 3.594 \end{array}$$

$$\textcircled{8} \begin{array}{r} 40.54 \\ -9.2 \\ \hline 31.34 \end{array}$$

$$\textcircled{9} \begin{array}{r} 8.415 \\ -1.507 \\ \hline 6.908 \end{array}$$

$$\textcircled{10} \begin{array}{r} 23.91 \\ -10.87 \\ \hline 13.04 \end{array}$$

$$\textcircled{11} \begin{array}{r} 9.28 \\ -4.063 \\ \hline 5.217 \end{array}$$

$$\textcircled{12} 87.4 - 24.9 = \underline{62.5}$$

$$\textcircled{13} 16.37 - 2.61 = \underline{13.76}$$

$$\textcircled{14} 5.12 - 4.8 = \underline{0.32}$$

$$\textcircled{15} 7.048 - 5.312 = \underline{1.736}$$

$$\textcircled{16} 25.64 - 3.241 = \underline{22.399}$$

$$\textcircled{17} 1.498 - 0.24 = \underline{1.258}$$

Fill in the missing numbers in each equation.

$$\text{EX } \begin{array}{r} 3.1 \square \\ +6.42 \\ \hline 9.55 \end{array}$$

$$\textcircled{1} \begin{array}{r} 2.78 \\ +5.\square1 \\ \hline 8.29 \end{array}$$

$$\textcircled{2} \begin{array}{r} 4.25 \\ +1.29 \\ \hline 5.\square4 \end{array}$$

$$\textcircled{3} \begin{array}{r} 0.\square8 \\ +3.47 \\ \hline 3.95 \end{array}$$

$$\textcircled{4} \begin{array}{r} 9.47 \\ -6.8\square \\ \hline 2.61 \end{array}$$

$$\textcircled{5} \begin{array}{r} 8.29 \\ -3.43 \\ \hline \square.86 \end{array}$$

$$\textcircled{6} \begin{array}{r} \square.05 \\ -1.24 \\ \hline 5.81 \end{array}$$

$$\textcircled{7} \begin{array}{r} 5.76 \\ -\square.12 \\ \hline 2.64 \end{array}$$

$$\textcircled{8} \begin{array}{r} 1.08 \\ +4.98 \\ \hline \square.06 \end{array}$$

$$\textcircled{9} \begin{array}{r} 4.6\square \\ -0.49 \\ \hline 4.13 \end{array}$$

$$\textcircled{10} \begin{array}{r} 2.73 \\ +5.\square1 \\ \hline 8.34 \end{array}$$

$$\textcircled{11} \begin{array}{r} 6.43 \\ -2.75 \\ \hline 3.6\square \end{array}$$

Compare each pair of expressions using $>$, $<$, or $=$.

$$\textcircled{12} 0.03 + 2.751 \text{ } < \text{ } 1.37 + 1.506$$

$$\underline{2.781} \qquad \underline{2.876}$$

$$\textcircled{13} 4.801 - 1.52 \text{ } > \text{ } 5.6 - 2.982$$

$$\underline{3.281} \qquad \underline{2.618}$$

$$\textcircled{14} 6.23 + 0.89 \text{ } < \text{ } 9.85 - 2.36$$

$$\underline{7.12} \qquad \underline{7.49}$$

$$\textcircled{15} 7.513 - 4.08 \text{ } = \text{ } 1.48 + 1.953$$

$$\underline{3.433} \qquad \underline{3.433}$$

Add or subtract to solve each word problem.

- $\textcircled{1}$ After work, Jason drives 3.8 miles to the library, and then another 6.25 miles to get home. How far did he drive in all?

$$3.8 + 6.25 = 10.05 \text{ miles}$$

- $\textcircled{2}$ In a 50-yard dash, Emily finished in 6.37 seconds and Kayla finished in 5.9 seconds. By how much did Kayla beat Emily in the race?

$$6.37 - 5.9 = 0.47 \text{ seconds}$$

- $\textcircled{3}$ Dominic buys a book that costs \$11.95. He pays with a \$20 bill. How much change should he get back?

$$20 - \$11.95 = \$8.05$$

- $\textcircled{4}$ A city received 3.02 inches of rain in March and 3.18 inches of rain in April. How much rain did the city receive across both months?

$$3.02 + 3.18 = 6.2 \text{ inches of rain}$$

- $\textcircled{5}$ Kelsey orders a burger that costs \$6.29 and a drink that costs \$1.99. What is the total price of her meal?

$$\$6.29 + \$1.99 = \$8.28$$

102 Multiplying Decimals

Multiply each decimal by a power of ten. For each zero in the power of ten, move the decimal point one place value to the right.

EX $2.376 \times 100 = \underline{237.6}$ 100 has two zeroes, so move the decimal point two places to the right.
 $\begin{array}{r} 2376 \\ 237.6 \end{array}$

- ① $1.25 \times 10 = \underline{12.5}$ ② $52.17 \times 100 = \underline{5,217}$
 ③ $4.26 \times 1,000 = \underline{4,260}$ ④ $49.35 \times 10 = \underline{493.5}$
 ⑤ $0.289 \times 100 = \underline{28.9}$ ⑥ $16.48 \times 10,000 = \underline{164,480}$

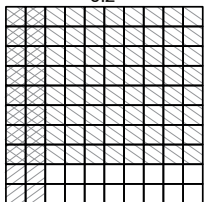
Multiply each decimal by a power of ten. Move the decimal point the number of places to the right indicated by the exponent.

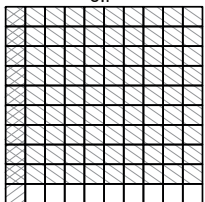
EX $0.264 \times 10^3 = \underline{264}$ The exponent is 3, so move the decimal point three places to the right.
 $\begin{array}{r} 0264 \\ 264 \end{array}$

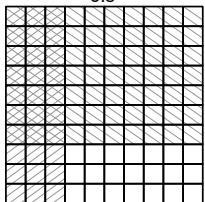
- ⑦ $8.264 \times 10^3 = \underline{8,264}$ ⑧ $29.3 \times 10^2 = \underline{2,930}$
 ⑨ $1.687 \times 10^4 = \underline{16,870}$ ⑩ $2.087 \times 10^2 = \underline{208.7}$
 ⑪ $64.781 \times 10^3 = \underline{64,781}$ ⑫ $0.092 \times 10^4 = \underline{920}$

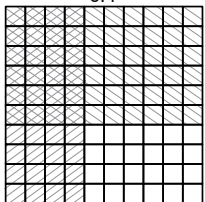
104 Multiplying Decimals

Use the area model to help you multiply each pair of decimals.

EX $\begin{array}{c} 0.2 \\ \times 0.8 \\ \hline \end{array}$  $0.2 \times 0.8 = \underline{0.16}$

① $\begin{array}{c} 0.1 \\ \times 0.9 \\ \hline \end{array}$  $0.1 \times 0.9 = \underline{0.09}$

② $\begin{array}{c} 0.3 \\ \times 0.7 \\ \hline \end{array}$  $0.3 \times 0.7 = \underline{0.21}$

③ $\begin{array}{c} 0.4 \\ \times 0.6 \\ \hline \end{array}$  $0.4 \times 0.6 = \underline{0.24}$

103 Multiplying Decimals

Multiply each decimal by a whole number.

EX $\begin{array}{r} 1.23 \\ \times 45 \\ \hline 615 \\ + 4920 \\ \hline 55.35 \end{array}$

- Multiply as you would with two whole numbers.
- Count up the decimals places in the factors.
- Move the decimal point in the product left that many places.

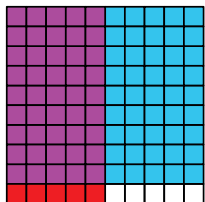
① $\begin{array}{r} 12 \\ 21.3 \\ \times 8 \\ \hline 170.4 \end{array}$ ② $\begin{array}{r} 43 \\ 5.75 \\ \times 16 \\ \hline 3450 \\ + 5750 \\ \hline 92.00 \text{ or } 92 \end{array}$ ③ $\begin{array}{r} 11 \\ 54 \\ 0.87 \\ \times 26 \\ \hline 522 \\ + 1740 \\ \hline 22.62 \end{array}$

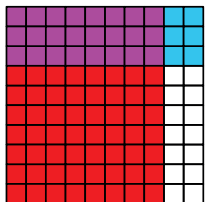
④ $\begin{array}{r} 11 \\ 32 \\ 6.54 \\ \times 37 \\ \hline 4578 \\ + 19620 \\ \hline 241.98 \end{array}$ ⑤ $\begin{array}{r} 54 \\ 32 \\ 0.97 \\ \times 64 \\ \hline 388 \\ + 5820 \\ \hline 62.08 \end{array}$ ⑥ $\begin{array}{r} 55 \\ 15.6 \\ \times 9 \\ \hline 140.4 \end{array}$

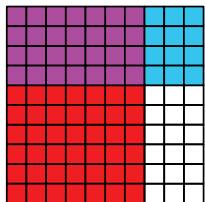
⑦ $\begin{array}{r} 51 \\ 8.72 \\ \times 7 \\ \hline 61.04 \end{array}$ ⑧ $\begin{array}{r} 32 \\ 64 \\ 1.75 \\ \times 48 \\ \hline 1400 \\ + 7000 \\ \hline 84.00 \text{ or } 84 \end{array}$ ⑨ $\begin{array}{r} 43 \\ 51.4 \\ \times 11 \\ \hline 514 \\ + 5140 \\ \hline 565.4 \end{array}$

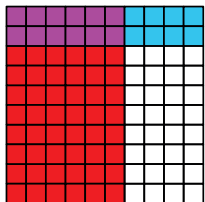
105 Multiplying Decimals

Shade in the area model and multiply each pair of decimals.

①  $0.5 \times 0.9 = \underline{0.45}$

②  $0.8 \times 0.3 = \underline{0.24}$

③  $0.7 \times 0.4 = \underline{0.28}$

④  $0.6 \times 0.2 = \underline{0.12}$

106 Multiplying Decimals

Multiply each pair of decimals.

- EX $\begin{array}{r} 1.43 \\ \times 2.5 \\ \hline 715 \\ + 2860 \\ \hline 3.575 \end{array}$
- Multiply as you would with two whole numbers.
 - Count up the decimals places in both factors.
 - Move the decimal point in the product left that many places.

1 $\begin{array}{r} 16.3 \\ \times 0.2 \\ \hline 3.26 \end{array}$ 2 $\begin{array}{r} 4.72 \\ \times 3.6 \\ \hline 2832 \\ + 14160 \\ \hline 16.992 \end{array}$ 3 $\begin{array}{r} 5.37 \\ \times 8.9 \\ \hline 4833 \\ + 42960 \\ \hline 47.793 \end{array}$

4 $\begin{array}{r} 10.8 \\ \times 1.26 \\ \hline 648 \\ 2160 \\ + 10800 \\ \hline 13.608 \end{array}$ 5 $\begin{array}{r} 2.93 \\ \times 4.4 \\ \hline 1172 \\ + 11720 \\ \hline 12.892 \end{array}$ 6 $\begin{array}{r} 95.13 \\ \times 0.6 \\ \hline 57.078 \end{array}$

7 $\begin{array}{r} 19.8 \\ \times 0.7 \\ \hline 13.86 \end{array}$ 8 $\begin{array}{r} 9.7 \\ \times 6.8 \\ \hline 776 \\ + 5820 \\ \hline 65.96 \end{array}$ 9 $\begin{array}{r} 21.34 \\ \times 3.2 \\ \hline 4268 \\ + 64020 \\ \hline 68.288 \end{array}$

Multiplying Decimals 107

Multiply.

1 $\begin{array}{r} 4.86 \\ \times 23 \\ \hline 1458 \\ + 9720 \\ \hline 111.78 \end{array}$ 2 $\begin{array}{r} 31.5 \\ \times 7.6 \\ \hline 1890 \\ + 22050 \\ \hline 239.40 \text{ or } 239.4 \end{array}$ 3 $\begin{array}{r} 8.19 \\ \times 5.2 \\ \hline 1638 \\ + 40950 \\ \hline 42.588 \end{array}$

4 $0.018 \times 10^3 = \underline{18}$ 5 $4.03 \times 100 = \underline{403}$
 6 $0.4 \times 0.2 = \underline{0.08}$ 7 $8 \times 0.06 = \underline{0.48}$

Multiply to solve each word problem.

- 8 A brick is 2.25 inches tall. If 7 bricks were stacked on top of each other, what would the height of the stack be?

$2.25 \times 7 = 15.75$ inches

- 9 At the school store, a pen costs \$0.85. How much would 5 pens cost?

$\$0.85 \times 5 = \4.25

- 10 A rug measures 3.5 meters long by 2.5 meters wide. What is the area of the rug, in square meters?

$3.5 \times 2.5 = 8.75$ square meters

108 Dividing Decimals

Divide each decimal by a power of ten. For each zero in the power of ten, move the decimal point one place value to the left.

EX $324.9 \div 100 = \underline{3.249}$ 100 has two zeroes, so move the decimal point two places to the left.

1 $57.9 \div 10 = \underline{5.79}$ 2 $3.1 \div 100 = \underline{0.031}$

3 $673.2 \div 1,000 = \underline{0.6732}$ 4 $156.52 \div 10 = \underline{15.652}$

5 $16.79 \div 100 = \underline{0.1679}$ 6 $9,875.3 \div 10,000 = \underline{0.98753}$

Divide each decimal by a power of ten. Move the decimal point the number of places to the left indicated by the exponent.

EX $875.9 \div 10^3 = \underline{0.8759}$ The exponent is 3, so move the decimal point three places to the left.

7 $1,985.2 \div 10^3 = \underline{1.9852}$ 8 $5.76 \div 10^2 = \underline{0.0576}$

9 $975.34 \div 10^4 = \underline{0.097534}$ 10 $12.823 \div 10^2 = \underline{0.12823}$

11 $3.1 \div 10^3 = \underline{0.0031}$ 12 $0.9 \div 10^4 = \underline{0.00009}$

Dividing Decimals 109

Divide each decimal by a whole number.

EX $12 \overline{)43.2}$ 1. Put a decimal point in the quotient directly above the decimal point in the dividend.
 2. Divide as you would normally with whole numbers.

1 $8 \overline{)24.96}$ 2 $7 \overline{)183.4}$ 3 $15 \overline{)18.45}$

4 $3 \overline{)172.2}$ 5 $11 \overline{)52.25}$ 6 $4 \overline{)92.8}$

7 $6 \overline{)1.44}$ 8 $9 \overline{)65.7}$ 9 $5 \overline{)81.5}$

Divide. Express any partial quotients as a decimal rather than a remainder.

$$\begin{array}{r} 37.25 \\ 8 \overline{)298.00} \\ \underline{-24} \\ 58 \\ \underline{-56} \\ 20 \\ \underline{-16} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

If the numbers do not divide evenly, add a decimal point to the end of the dividend (if it does not already have one) and attach a zero. Continue to divide. Add additional zeroes and repeat as needed until there is no remainder.

$$\begin{array}{r} 13.75 \\ 2 \overline{)27.50} \\ \underline{-21} \\ 07 \\ \underline{-6} \\ 15 \\ \underline{-14} \\ 10 \\ \underline{-10} \\ 0 \end{array}$$

$$\begin{array}{r} 16.4 \\ 5 \overline{)82.0} \\ \underline{-51} \\ 32 \\ \underline{-30} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

$$\begin{array}{r} 75.5 \\ 4 \overline{)302.0} \\ \underline{-28} \\ 22 \\ \underline{-20} \\ 20 \\ \underline{-20} \\ 0 \end{array}$$

$$\begin{array}{r} 25.25 \\ 12 \overline{)303.00} \\ \underline{-24} \\ 63 \\ \underline{-60} \\ 30 \\ \underline{-24} \\ 60 \\ \underline{-60} \\ 0 \end{array}$$

$$\begin{array}{r} 2.45 \\ 6 \overline{)14.70} \\ \underline{-12} \\ 27 \\ \underline{-24} \\ 30 \\ \underline{-30} \\ 0 \end{array}$$

$$\begin{array}{r} 6.45 \\ 8 \overline{)51.60} \\ \underline{-48} \\ 36 \\ \underline{-32} \\ 40 \\ \underline{-40} \\ 0 \end{array}$$

$$\begin{array}{r} 33.85 \\ 2 \overline{)67.70} \\ \underline{-61} \\ 07 \\ \underline{-6} \\ 17 \\ \underline{-16} \\ 10 \\ \underline{-10} \\ 0 \end{array}$$

Divide each pair of decimals.

$$\text{EX } 5.75 \div 0.46 = \underline{12.5}$$

1. When the divisor is a decimal, change it to a whole number by multiplying by a power of 10. Multiply the divisor by the same power of 10.

$$0.46 \times 100 = 46$$

$$5.75 \times 100 = 575$$

2. Divide.

$$\begin{array}{r} 12.5 \\ 46 \overline{)575.0} \\ \underline{-46} \\ 115 \\ \underline{-92} \\ 230 \\ \underline{-230} \\ 0 \end{array}$$

$$\textcircled{1} 74.88 \div 1.2 = \underline{62.4}$$

$$\begin{array}{r} 62.4 \\ 12 \overline{)748.8} \\ \underline{-72} \\ 28 \\ \underline{-24} \\ 48 \\ \underline{-48} \\ 0 \end{array}$$

$$\textcircled{2} 22.26 \div 0.7 = \underline{31.8}$$

$$\begin{array}{r} 31.8 \\ 7 \overline{)222.6} \\ \underline{-21} \\ 12 \\ \underline{-7} \\ 56 \\ \underline{-56} \\ 0 \end{array}$$

$$\textcircled{3} 2.96 \div 0.08 = \underline{37}$$

$$\begin{array}{r} 37 \\ 8 \overline{)296} \\ \underline{-61} \\ 07 \\ \underline{-6} \\ 17 \\ \underline{-16} \\ 10 \\ \underline{-10} \\ 0 \end{array}$$

$$\textcircled{4} 10.452 \div 0.26 = \underline{40.2}$$

$$\begin{array}{r} 40.2 \\ 26 \overline{)1045.2} \\ \underline{-104} \\ 05 \\ \underline{-0} \\ 52 \\ \underline{-52} \\ 0 \end{array}$$

Convert between customary units of length.

$$\textcircled{1} 1 \text{ yard} = \underline{36} \text{ inches}$$

$$\textcircled{2} 1 \text{ foot} = \underline{12} \text{ inches}$$

$$\textcircled{3} 1 \text{ mile} = \underline{5,280} \text{ feet}$$

$$\textcircled{4} 1,760 \text{ yards} = \underline{1} \text{ miles}$$

$$\textcircled{5} 12 \text{ feet} = \underline{4} \text{ yards}$$

$$\textcircled{6} 72 \text{ inches} = \underline{6} \text{ feet}$$

$$\textcircled{7} 3 \text{ yards} = \underline{108} \text{ inches}$$

$$\textcircled{8} \frac{1}{2} \text{ mile} = \underline{2,640} \text{ feet}$$

$$\textcircled{9} 2 \text{ miles} = \underline{3,520} \text{ yards}$$

$$\textcircled{10} \frac{2}{3} \text{ yard} = \underline{24} \text{ inches}$$

$$\textcircled{11} 2\frac{1}{2} \text{ feet} = \underline{30} \text{ inches}$$

$$\textcircled{12} \frac{1}{4} \text{ yard} = \underline{9} \text{ inches}$$

Compare each pair of lengths using $>$, $<$, or $=$.

$$\text{EX } 35 \text{ in. } \langle 1 \text{ yd.}$$

$$\textcircled{13} 1 \text{ mi. } = 5,820 \text{ ft.}$$

$$\textcircled{14} 47 \text{ in. } \langle 4 \text{ ft.}$$

$$\textcircled{15} 16 \text{ in. } \langle \frac{1}{2} \text{ yd.}$$

$$\textcircled{16} 26 \text{ ft. } \rangle 8 \text{ yd.}$$

$$\textcircled{17} 10 \text{ ft. } = 3\frac{1}{3} \text{ yd.}$$

Convert between customary units of weight.

$$\textcircled{1} 1 \text{ pound} = \underline{16} \text{ ounces}$$

$$\textcircled{2} 1 \text{ ton} = \underline{2,000} \text{ pounds}$$

$$\textcircled{3} 32 \text{ ounces} = \underline{2} \text{ pounds}$$

$$\textcircled{4} 6,000 \text{ pounds} = \underline{3} \text{ tons}$$

$$\textcircled{5} 1 \text{ ton} = \underline{32,000} \text{ ounces}$$

$$\textcircled{6} 5 \text{ pounds} = \underline{80} \text{ ounces}$$

$$\textcircled{7} \frac{1}{2} \text{ ton} = \underline{1,000} \text{ pounds}$$

$$\textcircled{8} \frac{1}{4} \text{ pound} = \underline{4} \text{ ounces}$$

$$\textcircled{9} \frac{3}{4} \text{ ton} = \underline{1,500} \text{ pounds}$$

$$\textcircled{10} 2 \text{ tons} = \underline{64,000} \text{ ounces}$$

$$\textcircled{11} 4\frac{1}{2} \text{ tons} = \underline{9,000} \text{ pounds}$$

$$\textcircled{12} 3\frac{1}{8} \text{ pounds} = \underline{50} \text{ ounces}$$

Compare each pair of weights using $>$, $<$, or $=$.

$$\text{EX } 31 \text{ oz. } \langle 2 \text{ lbs.}$$

$$\textcircled{13} 8 \text{ T } \rangle 15,000 \text{ lbs.}$$

$$\textcircled{14} \frac{7}{8} \text{ lb. } = 14 \text{ oz.}$$

$$\textcircled{15} \frac{1}{2} \text{ T } = 16,000 \text{ oz.}$$

$$\textcircled{16} 12 \text{ lbs. } \langle 200 \text{ oz.}$$

$$\textcircled{17} 80 \text{ oz. } \langle 5\frac{1}{2} \text{ lbs.}$$

Convert between customary units of volume.

- ① 1 pint = 2 cups ② 1 quart = 4 cups
 ③ 1 cup = 8 fluid ounces ④ 1 gallon = 4 quarts
 ⑤ 1 quart = 2 pints ⑥ 20 quarts = 5 gallons
 ⑦ 2 quarts = 8 cups ⑧ $\frac{1}{2}$ gallon = 8 cups
 ⑨ 3 pints = 48 fluid ounces ⑩ 72 pints = 12 gallons
 ⑪ $6\frac{1}{2}$ quarts = 13 pints ⑫ $\frac{1}{2}$ pint = 8 fluid ounces

Compare each pair of volumes using $>$, $<$, or $=$.

- EX 10 pt. $<$ 10 qt. ⑬ 1 gal. $>$ 64 fl. oz.
 ⑭ 20 c. $=$ 10 pt. ⑮ $\frac{1}{4}$ qt. $>$ 6 fl. oz.
 ⑯ 8 qt. $>$ 24 c. ⑰ 9 pt. $=$ $1\frac{1}{8}$ gal.

Add mixed customary units of measurement.

- EX 3 qt. 1 pt. + 2 qt. 1 pt. = 6 qt. 0 pt.
 1. Add like units.

$$\begin{array}{r} 3 \text{ qt. } 1 \text{ pt.} \\ + 2 \text{ qt. } 1 \text{ pt.} \\ \hline 5 \text{ qt. } 2 \text{ pt.} \end{array}$$

 2. Regroup if needed. $6 \text{ qt. } 0 \text{ pt.}$ Since 2 pt. = 1 qt., you can regroup.

- ① 8 lbs 3 oz. + 6 lbs. 9 oz. = 14 lbs. 12 oz.
 ② 4 c. 5 fl. oz. + 2 c. 6 fl. oz. = 7 c. 3 fl. oz.
 ③ 5 yd. 2 ft. + 7 yd. 2 ft. = 13 yd. 1 ft.
 ④ A delivery truck weighs 5 T when empty. When it is carrying a load that weighs 2 T 400 lbs., what is its total weight?

$$5 \text{ T} + 2 \text{ T } 400 \text{ lbs} = 7 \text{ T } 400 \text{ lbs}$$

Convert between mixed customary units of measurement.

- EX 40 inches = 3 feet 4 inches
 ① 66 ounces = 4 pounds 2 ounces
 ② 45 fluid ounces = 5 cups 5 fluid ounces
 ③ 26 feet = 8 yards 2 feet
 ④ 7,356 pounds = 3 tons 1,356 pounds
 ⑤ 18 pints = 2 gallons 2 pints
 ⑥ 1 mile 87 feet = 5,367 feet
 ⑦ 8 pounds 10 ounces = 138 ounces
 ⑧ 7 quarts 2 cups = 30 cups
 ⑨ 6 feet 3 inches = 75 inches
 ⑩ 9 cups 6 fluid ounces = 78 fluid ounces

Subtract mixed customary units of measurement.

- EX 2 mi. 300 ft. - 800 ft. = 1 mi. 4,780 ft.
 1. Borrow if needed.

$$\begin{array}{r} 2 \text{ mi. } 300 \text{ ft.} \\ - 800 \text{ ft.} \\ \hline 1 \text{ mi. } 5,580 \text{ ft.} \\ - 800 \text{ ft.} \\ \hline 1 \text{ mi. } 4,780 \text{ ft.} \end{array}$$
 1 mi. = 5,280 ft., so you can borrow 1 from the miles and add 5,280 to the feet.
 2. Subtract like units.

- ① 10 yd. 1 ft. - 5 yd. 2 ft. = 4 yd. 2 ft.
 ② 2 T - 500 lbs. = 1 T 1,500 lbs.
 ③ 4 gal. - 15 c. = 3 gal. 1 c.
 ④ James is 6 ft. 2 in. tall. Morgan is 5 ft. 6 in. tall. How much taller is James than Morgan?

$$6 \text{ ft. } 2 \text{ in.} - 5 \text{ ft. } 6 \text{ in.} = 8 \text{ inches}$$

Use the metric unit conversion chart to help you convert between metric units of length.

Kilo-	Hecto-	Deka-	Base Unit	Deci-	Centi-	Milli-
1,000	100	10	1	0.1	0.01	0.001
Kilometer (km)	Hectometer (hm)	Dekameter (dam)	Meter (m)	Decimeter (dm)	Centimeter (cm)	Millimeter (mm)

- ① 3 m = 300 cm ② 7 km = 7,000 m
 ③ 60 dam = 6 hm ④ 12 dm = 1,200 mm
 ⑤ 350 mm = 35 cm ⑥ 27 hm = 2.7 km
 ⑦ 183 cm = 0.183 dam ⑧ 8.9 m = 8,900 mm
 ⑨ 16.5 hm = 16,500 dm ⑩ 0.2 dam = 0.002 km

Compare each pair of lengths using >, <, or =.

- EX 37 cm < 4 m ⑪ 8.5 hm = 850 m
 ⑫ 0.3 km = 30 dam ⑬ 91 dm < 700 m
 ⑭ 14 mm > 1 cm ⑮ 540 m < 5.5 km

Use the metric unit conversion chart to help you convert between metric units of volume.

Kilo-	Hecto-	Deka-	Base Unit	Deci-	Centi-	Milli-
1,000	100	10	1	0.1	0.01	0.001
Kiloliter (kL)	Hectoliter (hL)	Dekaliter (daL)	Liter (L)	Deciliter (dL)	Centiliter (cL)	Milliliter (mL)

- ① 28 L = 28,000 mL ② 1.7 kL = 1,700 L
 ③ 41 daL = 41 hL ④ 0.9 dL = 90 mL
 ⑤ 721 mL = 721 cL ⑥ 3.7 hL = 0.37 kL
 ⑦ 92.1 cL = 0.0921 daL ⑧ 22 L = 2,200 cL
 ⑨ 63 hL = 63,000 dL ⑩ 70 daL = 0.7 kL

Circle the smallest volume in each row.

- ⑪ 87 L 870 mL 87,000 cL 8.7 daL
 ⑫ 5.23 daL 52.3 hL 5.23 kL 523 L
 ⑬ 9.12 dL 0.912 daL 91.2 L 912 cL
 ⑭ 0.05 hL 0.5 L 5 cL 500 mL

Use the metric unit conversion chart to help you convert between metric units of mass.

Kilo-	Hecto-	Deka-	Base Unit	Deci-	Centi-	Milli-
1,000	100	10	1	0.1	0.01	0.001
Kilogram (kg)	Hectogram (hg)	Dekagram (dag)	Gram (g)	Decigram (dg)	Centigram (cg)	Milligram (mg)

- ① 14 g = 1.4 dag ② 11 kg = 110 hg
 ③ 3.2 dag = 3,200 cg ④ 240 dg = 24,000 mg
 ⑤ 98.3 mg = 0.0983 g ⑥ 13.1 hg = 131 dag
 ⑦ 0.4 cg = 0.04 dg ⑧ 27 g = 27,000 mg
 ⑨ 1.37 hg = 1,370 dg ⑩ 4 dag = 0.4 hg

Circle the largest mass in each row.

- ⑪ 43 g 430 cg 0.43 kg 4,300 mg
 ⑫ 8.5 dag 850 hg 0.085 kg 8,500 cg
 ⑬ 239 dg 2.39 kg 0.239 hg 239 g
 ⑭ 78.2 cg 782 g 7,820 mg 7.82 dg

Convert between mixed metric units of measurement.

- EX 4 m 50 cm = 450 cm
 ① 8 L 25 mL = 8.025 mL
 ② 13 kg 450 g = 13,450 g
 ③ 2,134 m = 2 km 134 m
 ④ 12,936 mL = 12 L 936 mL
 ⑤ 6,503 mg = 6 g 503 mg
 ⑥ 10 hm 87 m = 1,087 m
 ⑦ 3 L 8 dL = 38 dL
 ⑧ 31 g 45 cg = 3,145 cg
 ⑨ 15,927 mm = 15 m 927 mm
 ⑩ 502 L = 5 hL 2 L

Add mixed metric units of measurement.

EX) $3 \text{ kg } 358 \text{ g} + 2 \text{ kg } 722 \text{ g} = \underline{6} \text{ kg } \underline{80} \text{ g}$

1. Add like units.

$$\begin{array}{r} 3 \text{ kg} \quad 358 \text{ g} \\ + 2 \text{ kg} \quad 722 \text{ g} \\ \hline 5 \text{ kg} \quad 1,080 \text{ g} \end{array}$$

2. Regroup if needed.

$$\begin{array}{r} 5 \text{ kg} \quad 1,080 \text{ g} \\ \hline 6 \text{ kg} \quad 80 \text{ g} \end{array}$$

Since 1,000 g = 1 kg, you can regroup. Subtract 1,000 from the g and add 1 to the kg.

① $8 \text{ m } 47 \text{ cm} + 4 \text{ m } 58 \text{ cm} = \underline{13} \text{ m } \underline{5} \text{ cm}$

② $9 \text{ L } 201 \text{ mL} + 5 \text{ L } 63 \text{ mL} = \underline{14} \text{ L } \underline{264} \text{ mL}$

③ $3 \text{ g } 27 \text{ mg} + 5 \text{ g } 102 \text{ mg} = \underline{8} \text{ g } \underline{129} \text{ mg}$

- ④ Allison made punch that included 3 L 700 mL of juice and 1 L 500 mL of ginger ale. What is the total volume of liquid in the punch?

$$3 \text{ L } 700 \text{ mL} + 1 \text{ L } 500 \text{ mL} = 5 \text{ L } 200 \text{ mL}$$

Subtract mixed metric units of measurement.

EX) $7 \text{ L } 200 \text{ mL} - 3 \text{ L } 650 \text{ mL} = \underline{3} \text{ L } \underline{550} \text{ mL}$

1. Borrow if needed.

$$\begin{array}{r} 7 \text{ L} \quad 200 \text{ mL} \\ - 3 \text{ L} \quad 650 \text{ mL} \\ \hline \end{array}$$

1 L = 1,000 mL, so you can borrow 1 from the liters and add 1,000 to the milliliters.

2. Subtract like units.

$$\begin{array}{r} 6 \text{ L} \quad 1,200 \text{ mL} \\ - 3 \text{ L} \quad 650 \text{ mL} \\ \hline 3 \text{ L} \quad 550 \text{ mL} \end{array}$$

① $4 \text{ km } 300 \text{ m} - 2 \text{ km } 400 \text{ m} = \underline{1} \text{ km } \underline{900} \text{ m}$

② $6 \text{ kg} - 700 \text{ g} = \underline{5} \text{ kg } \underline{300} \text{ g}$

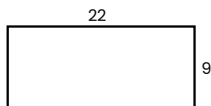
③ $5 \text{ L } 250 \text{ mL} - 1 \text{ L } 186 \text{ mL} = \underline{4} \text{ L } \underline{64} \text{ mL}$

- ④ Kyle ran 4 km 500 m on Tuesday. On Wednesday, he ran 3 km 800 m. How much farther did he run on Tuesday than Wednesday?

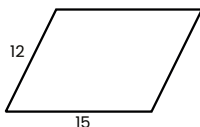
$$4 \text{ km } 500 \text{ m} - 3 \text{ km } 800 \text{ m} = 700 \text{ m}$$

Find the perimeter of each figure.

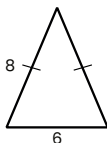
① Perimeter = $\underline{62}$ units



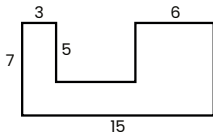
② Perimeter = $\underline{54}$ units



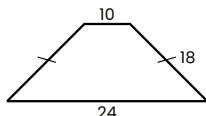
③ Perimeter = $\underline{22}$ units



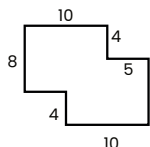
④ Perimeter = $\underline{54}$ units



⑤ Perimeter = $\underline{70}$ units

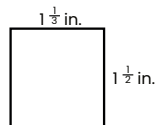


⑥ Perimeter = $\underline{54}$ units

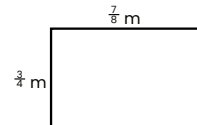


Find the perimeter. Write your answer as a whole or mixed number in lowest terms.

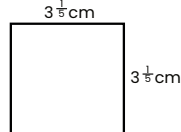
① Perimeter = $\underline{5 \frac{2}{3}}$ in.



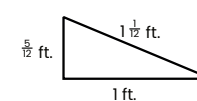
② Perimeter = $\underline{3 \frac{1}{4}}$ m



③ Perimeter = $\underline{12 \frac{4}{5}}$ cm



④ Perimeter = $\underline{2 \frac{1}{2}}$ ft.

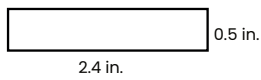


- ⑤ A piece of paper measures $8 \frac{1}{2}$ inches by 11 inches. What is the perimeter of the paper?

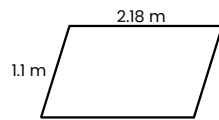
$$8 \frac{1}{2} + 8 \frac{1}{2} + 11 + 11 = 39 \text{ inches}$$

Find the perimeter. Write your answer as a whole number or decimal.

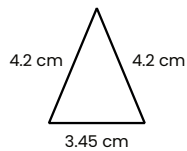
① Perimeter = 5.8 in.



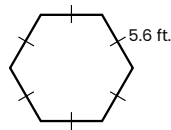
② Perimeter = 6.56 m



③ Perimeter = 11.85 cm



④ Perimeter = 33.6 ft.

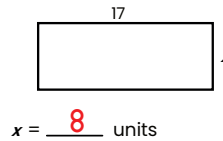


- ⑤ A square garden plot measures 3.25 meters on each side. What is the perimeter of the plot?

$3.25 \times 4 = 13$ meters

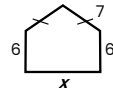
Use the perimeter of each figure to find the length of the side marked x .

① Perimeter = 50 units



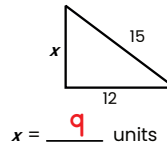
$x = 8$ units

② Perimeter = 35 units



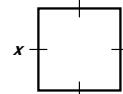
$x = 9$ units

③ Perimeter = 36 units



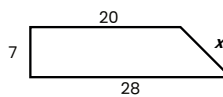
$x = 9$ units

④ Perimeter = 80 units



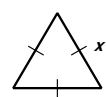
$x = 20$ units

⑤ Perimeter = 65 units



$x = 10$ units

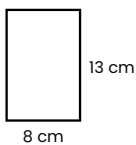
⑥ Perimeter = 45 units



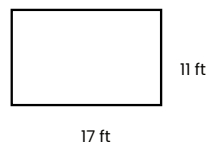
$x = 15$ units

Find the area of each rectangle.

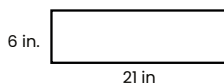
① Area = 104 cm²



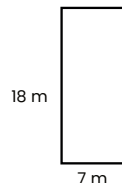
② Area = 187 ft²



③ Area = 126 in²



④ Area = 126 m²

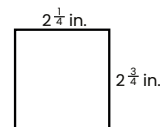


- ⑤ A floor tile measures 12 inches by 24 inches. What is the area of the tile in square inches?

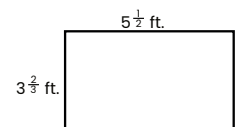
$12 \times 24 = 288$ square inches

Find the area of each rectangle. Write your answer as a whole or mixed number in lowest terms.

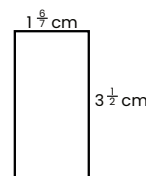
① Area = $6\frac{3}{16}$ in²



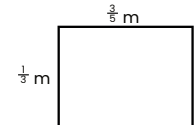
② Area = $20\frac{1}{6}$ ft²



③ Area = $6\frac{1}{2}$ cm²



④ Area = $\frac{1}{5}$ m²



- ⑤ A rectangular rug measures $6\frac{1}{2}$ feet by $9\frac{1}{4}$ feet. What is the area of the rug in square feet?

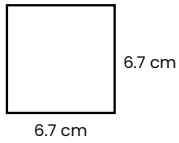
$6\frac{1}{2} \times 9\frac{1}{4} = 60\frac{1}{8}$ square feet

132

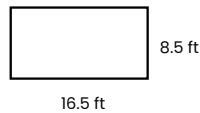
Geometric Measurement

Find the area of each rectangle. Write your answer as a whole number or decimal.

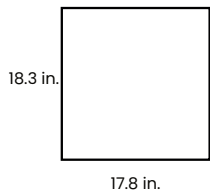
① Area = 44.89 cm²



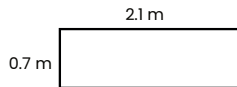
② Area = 140.25 ft²



③ Area = 325.74 in²



④ Area = 1.47 m²



- ⑤ A room measures 3.5 meters by 4.2 meters. What is the area of the room in square meters?

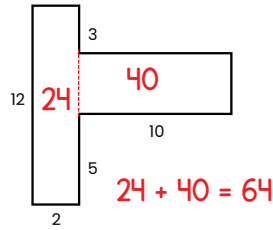
$$3.5 \times 4.2 = 14.7 \text{ square meters}$$

Geometric Measurement

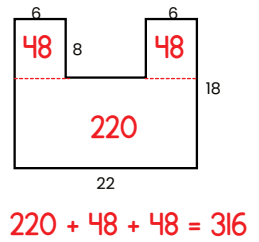
133

Divide each compound figure into rectangles in order to find the total area of the figure.

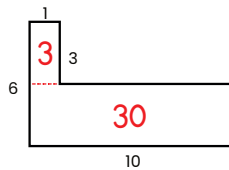
① Area = 64 units²



② Area = 316 units²

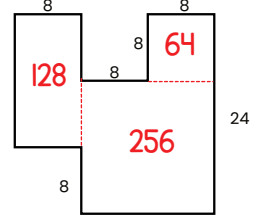


③ Area = 33 units²



$$30 + 3 = 33$$

④ Area = 448 units²



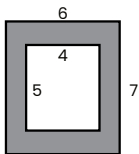
$$128 + 256 + 64 = 448$$

134

Geometric Measurement

Find the area of the shaded region.

Ex) Area = 22 units²



1. Find the area of the outer rectangle.

$$6 \times 7 = 42$$

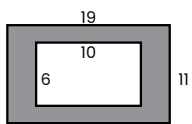
2. Find the area of the inner rectangle.

$$4 \times 5 = 20$$

3. Subtract to find the area of the shaded region.

$$42 - 20 = 22$$

① Area = 149 units²

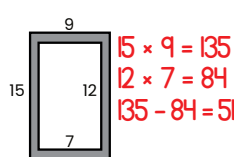


$$19 \times 11 = 209$$

$$10 \times 6 = 60$$

$$209 - 60 = 149$$

② Area = 51 units²

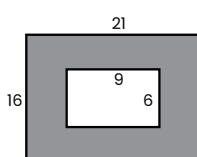


$$15 \times 9 = 135$$

$$12 \times 7 = 84$$

$$135 - 84 = 51$$

③ Area = 282 units²

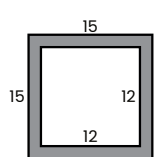


$$21 \times 16 = 336$$

$$9 \times 6 = 54$$

$$336 - 54 = 282$$

④ Area = 81 units²



$$15 \times 15 = 225$$

$$12 \times 12 = 144$$

$$225 - 144 = 81$$

Geometric Measurement

135

Solve each word problem involving perimeter or area.

- ① Peggy painted a 20 inch by 30 inch canvas. She wants to frame it with a wooden border. What will be the length of the border?

$$20 + 20 + 30 + 30 = 100 \text{ inches}$$

- ② A television screen measures 38 inches by 21 inches. What is the area of the screen?

$$38 \times 21 = 798 \text{ square inches}$$

- ③ A certain city block measures 80 m by 250 m. If you walked all the way around the block, what would be the total distance traveled?

$$80 + 250 + 80 + 250 = 660 \text{ m}$$

- ④ A window measures 36 inches by 60 inches. How many linear feet of trim would be needed to border the window?

$$36 + 60 + 36 + 60 = 192 \text{ in}$$

$$192 \div 12 = 16 \text{ feet}$$

16 feet of trim

- ⑤ A picture frame measuring 11 by 14 inches holds an 8 by 10 inch photo bordered by a mat that fills the rest of the frame. What is the visible area of the mat?

$$11 \times 14 = 154$$

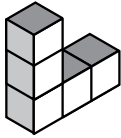
$$8 \times 10 = 80$$

$$154 - 80 = 74$$

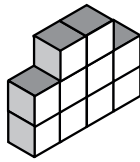
74 square inches

Find the volume of each object by counting unit cubes.

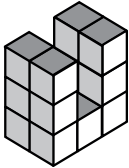
EX Volume = 5 units³



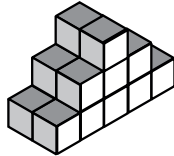
1 Volume = 10 units³



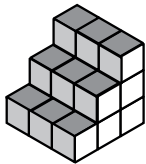
2 Volume = 14 units³



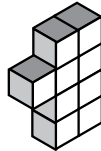
3 Volume = 18 units³



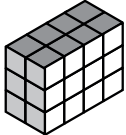
4 Volume = 18 units³

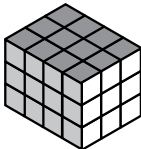


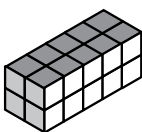
5 Volume = 9 units³

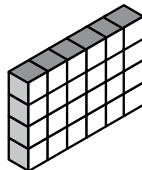


Multiply to find the volume of each rectangular prism.

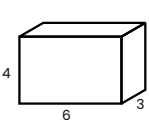
EX  Length = 4 units
Width = 2 units
Height = 3 units
Volume = 4 × 2 × 3 = 24 units³

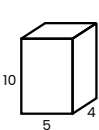
1  Length = 3 units
Width = 4 units
Height = 3 units
Volume = 3 × 4 × 3 = 36 units³

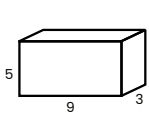
2  Length = 5 units
Width = 2 units
Height = 2 units
Volume = 5 × 2 × 2 = 20 units³

3  Length = 6 units
Width = 1 units
Height = 4 units
Volume = 6 × 1 × 4 = 24 units³


Find the volume of each rectangular prism.

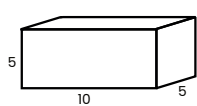
EX  Length = 6 units
Width = 3 units
Height = 4 units
Volume = 6 × 3 × 4 = 72 units³

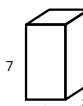
1  Length = 5 units
Width = 4 units
Height = 10 units
Volume = 5 × 4 × 10 = 200 units³

2  Length = 9 units
Width = 3 units
Height = 5 units
Volume = 9 × 5 × 3 = 135 units³


3  Length = 8 units
Width = 5 units
Height = 5 units
Volume = 200 units³


4  Length = 12 units
Width = 3 units
Height = 4 units
Volume = 144 units³


5  Length = 10 units
Width = 5 units
Height = 5 units
Volume = 250 units³


6  Length = 7 units
Width = 3 units
Height = 3 units
Volume = 63 units³

Find the volume of each cube.


EX  Side = 4 units
Volume = 4 × 4 × 4 = 64 units³

1  Side = 3 units
Volume = 3 × 3 × 3 = 27 units³

2  Side = 5 units
Volume = 5 × 5 × 5 = 125 units³

3  Side = 6 units
Volume = 6 × 6 × 6 = 216 units³

4  Side = 2 units
Volume = 8 units³

5  Side = 10 units
Volume = 1,000 units³

6 What is the volume of a cube whose sides each measure 7 cm?
 $7 \times 7 \times 7 = 343 \text{ cm}^3$

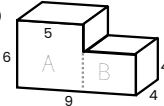
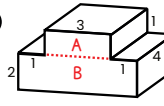
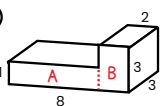
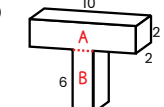
Solve each word problem involving volume.

- ① A rectangular water tank measures 8 feet long by 5 feet wide by 2 feet tall. What is the volume of the tank?
 $8 \times 5 \times 2 = 80 \text{ ft}^3$
- ② Matt keeps his art supplies in a rectangular storage box that measures 18 cm by 10 cm by 5 cm. What is the volume of the box?
 $18 \times 10 \times 5 = 900 \text{ cm}^3$
- ③ Gretchen has a fish tank that is a 20-inch cube. What is the volume of the fish tank?
 $20 \times 20 \times 20 = 8,000 \text{ in}^3$
- ④ Carson builds a rectangular fort out of blocks that measures 8 inches by 10 inches by 6 inches. What is the volume of the fort?
 $8 \times 10 \times 6 = 480 \text{ in}^3$
- ⑤ Kate uses cube-shaped containers to store toys. Each one is 12 inches wide. What is the total volume of 2 of these containers?
 $12 \times 12 \times 12 = 1,728 \text{ in}^3$
 $1,728 \times 2 = 3,456 \text{ in}^3$
 $3,456 \text{ in}^3$

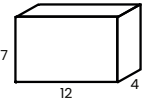
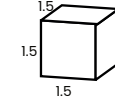
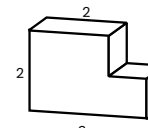
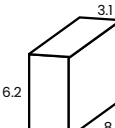
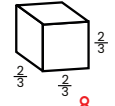
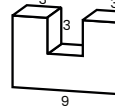
Fill in the bubble that correctly answers each question.

- ① A rectangular prism has a length of 5 cm and a height of 4 cm. If its volume is 160 cm^3 , what is its width?
 8 cm 10 cm 12 cm
- ② Which of these could NOT be the dimensions of a rectangular prism with a volume of 48 m^3 ?
 $4 \text{ m} \times 3 \text{ m} \times 4 \text{ m}$ $2 \text{ m} \times 3 \text{ m} \times 8 \text{ m}$ $4 \text{ m} \times 6 \text{ m} \times 3 \text{ m}$
- ③ What is the height of a cube whose volume is 512 in^3 ?
 6 in 8 in 9 in
- ④ Which of these could be the dimensions of a rectangular prism with the same volume as one that measures $3 \text{ m} \times 2 \text{ m} \times 6 \text{ m}$?
 $2 \text{ m} \times 5 \text{ m} \times 4 \text{ m}$ $3 \text{ m} \times 3 \text{ m} \times 4 \text{ m}$ $4 \text{ m} \times 2 \text{ m} \times 2 \text{ m}$
- ⑤ A cube shaped container 10 inches tall is filled exactly halfway with water. What volume of the container is filled?
 500 in^3 750 in^3 $1,000 \text{ in}^3$

Find the volume of each compound figure by breaking it down into rectangular prisms.

- EX  Volume A = $5 \times 4 \times 5 = 120 \text{ units}^3$
 Volume B = $4 \times 4 \times 4 = 64 \text{ units}^3$
 Total volume = $120 + 64 = 184 \text{ units}^3$
- ①  Volume A = $3 \times 4 \times 1 = 12 \text{ units}^3$
 Volume B = $5 \times 4 \times 2 = 40 \text{ units}^3$
 Total volume = $12 + 40 = 52 \text{ units}^3$
- ②  Volume A = $6 \times 3 \times 1 = 18 \text{ units}^3$
 Volume B = $2 \times 3 \times 3 = 18 \text{ units}^3$
 Total volume = $18 + 18 = 36 \text{ units}^3$
- ③  Volume A = $10 \times 2 \times 2 = 40 \text{ units}^3$
 Volume B = $2 \times 2 \times 6 = 24 \text{ units}^3$
 Total volume = $40 + 24 = 64 \text{ units}^3$

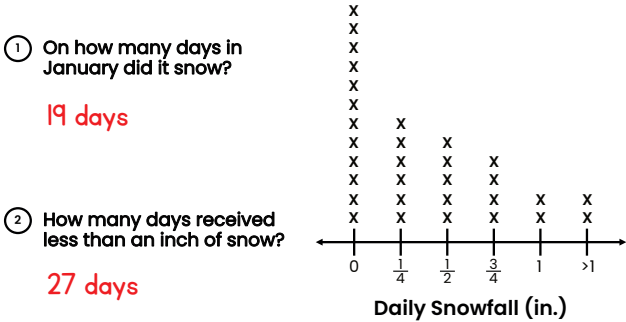
Find the volume of each figure.

- ①  Volume = 336 units^3
- ②  Volume = 3.375 units^3
- ③  Volume = 5 units^3
- ④  Volume = 153.76 units^3
- ⑤  Volume = 27 units^3
- ⑥  Volume = 90 units^3

144 Representing Data

Use the line plot to answer the questions that follow.

The line plot shows the amount of snowfall the same locations received each day in the month of January.



① On how many days in January did it snow?

19 days

② How many days received less than an inch of snow?

27 days

③ How many days received more than half an inch of snow?

8 days

④ On January 3, it snowed $\frac{1}{4}$ in. On how many days in January did it snow exactly twice as much as on January 3?

5 days

146 Representing Data

Use the frequency table below to answer the questions that follow.

The frequency table shows how many 6-hour shifts each of seven coffee shop employees worked last week.

Employee Name	Shifts Worked
Alexis	5
Brendan	4
Cassidy	6
Drake	5
Evelyn	4
Finn	5
Gretchen	3

① Which employee worked the most shifts last week?

Cassidy

② How many employees worked at least 5 shifts last week?

4 employees

③ How many more shifts did Alexis work than Gretchen?

$5 - 3 = 2$ shifts

④ How many total hours did Evelyn work last week?

$4 \times 6 = 24$ hours

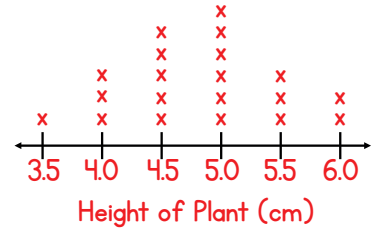
145 Representing Data

Make a line plot to show the data given. Then, answer the questions below.

Students in a class each planted a radish. Two weeks later, the students measured the heights of their plants to the nearest half-centimeter. The results are recorded in the tally chart.

Height of Plant (cm)	Number of Plants
3.5	
4.0	
4.5	
5.0	
5.5	
6.0	

Create a line plot to show this data.



① How many plants were taller than 5 cm?

5 plants

② What is difference in heights between the tallest and shortest plants?

2.5 cm

③ What was the height of the shortest plant in millimeters?

35 mm

147 Representing Data

Use the information below to complete the frequency chart. Then, answer the questions that follow.

A board game contains a spinner with sections numbered 1-8. Madeline spun the spinner repeated and recorded the number the spinner landed on each time. Her results are shown below.

2, 4, 1, 2, 5, 7, 6, 8, 1, 5,
4, 4, 5, 8, 7, 1, 3, 8, 4, 6

Use this data to complete the frequency table below to show how often the spinner landed on each number.

Number on Spinner	Frequency
1	3
2	2
3	1
4	4
5	3
6	2
7	2
8	3

① How many times did Madeline spin an odd number?

9 times

② How many times did Madeline spin a number greater than 4?

10 times

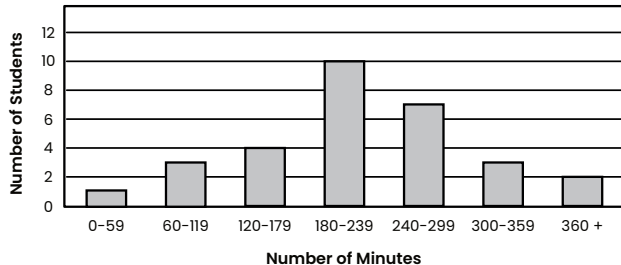
③ How many more times would Madeline have to spin a 3 to equal the number of times she spun a 7?

1 time

Use the histogram to answer the questions that follow.

A class held a reading challenge where students recorded the number of minutes they spent reading over the course of two weeks. The results are shown in the histogram below.

How Long Students Read During the Challenge

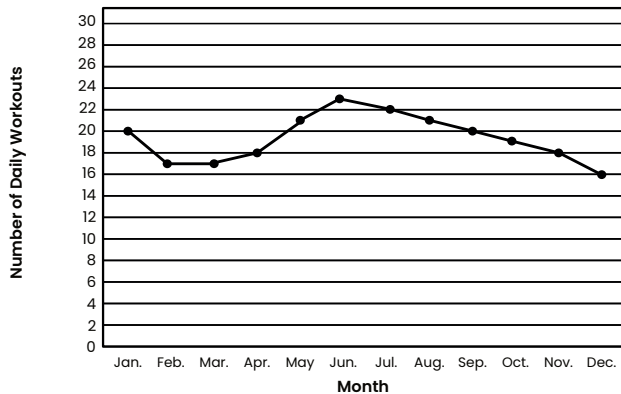


- How many students read for less than 1 hour?
1 student
- How many students read for at least 300 minutes?
5 students
- What was the most common total number of hours read?
3 hours

Use the line graph to answer the questions that follow.

Chris kept track of how many days each month he worked out for a year. The results are shown on the graph below.

Workouts Per Month



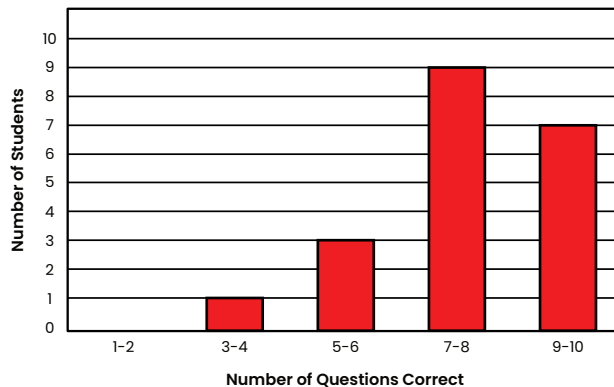
- How many days did Chris work out from March to May?
 $17 + 18 + 21 = 56$ days
- In how many months did Chris work out more than 20 days?
4 months (May, June, July, August)
- How many more days did Chris work out in July than January?
 $22 - 20 = 2$ more days

Create a histogram based on the information given.

Students in a class took a 10-question quiz. The number of questions each student got correct out of 10 are recorded on the frequency table. Use this data to complete the histogram below.

Questions Correct	1	2	3	4	5	6	7	8	9	10
Number of Students	0	0	0	1	1	2	4	5	4	3

Quiz Questions Answered Correctly



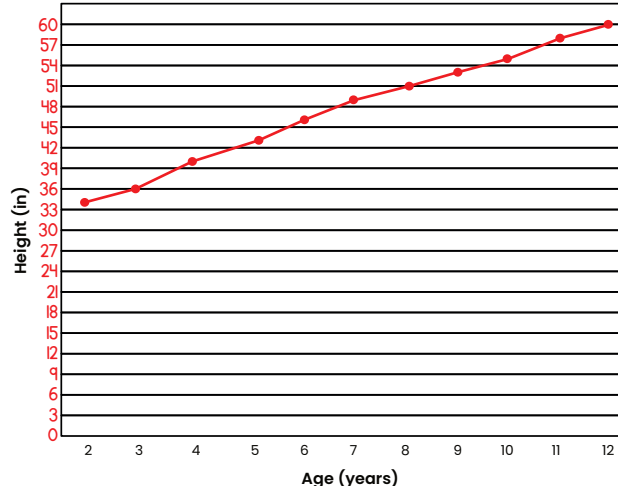
Create a line graph using the data below.

The table below lists Reagan's height, in inches, each year from ages 2 to 12.

Age	2	3	4	5	6	7	8	9	10	11	12
Height (in)	34	36	40	43	46	49	51	53	55	58	60

Choose an appropriate scale and record the data on the line graph below.

Reagan's Height



****Note: Graph may vary based on scale chosen.****

Use the stem and leaf plot to answer the questions that follow.

The stem and leaf plot below shows the number of points scored per game by a basketball team in its 20 most recent games.

Stem	Leaf
5	2 2 8
6	0 0 6 7
7	2 3 4 5 5 5 7 8
8	0 1 2 5 6

- What was the highest number of points the team scored in a game?
86 points
- How many times did the team score exactly 60 points?
2 times
- In how many games did the team score at least 75 points?
10 games
- In how many games did the team score fewer than 70 points?
7 games
- What was the point difference between the highest and lowest scoring games?
 $86 - 52 = 34$ points

Create a stem and leaf plot using the data below. Then, answer the questions that follow.

Carson measured 10 angles with a protractor. The measures of the angles (in degrees) were 78, 60, 90, 95, 56, 85, 72, 98, 90, and 65. Fill in these measurements on the stem and leaf plot below.

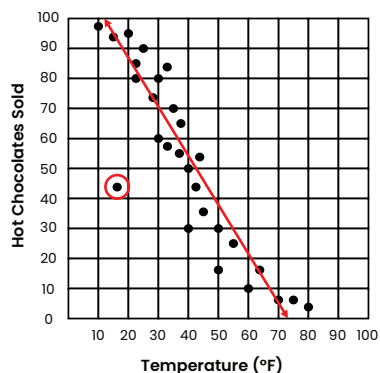
Stem	Leaf
5	6
6	0 5
7	2 8
8	5
9	0 0 5 8

- What is the difference between the largest and smallest angles?
 $98^\circ - 56^\circ = 42^\circ$
- How many angles measured at least 60° ?
9 angles
- How many of the angles were right angles?
2 angles
- Were there more acute, right, or obtuse angles in the group? Explain how you know.
There were more acute angles in the group. 6 angles were acute, 2 were right, and 2 were obtuse.

Use the scatter plot to answer the questions that follow.

The scatter plot below shows the average temperature and number of hot chocolates sold each day at a cafe.

Temperature and Hot Chocolate Sales



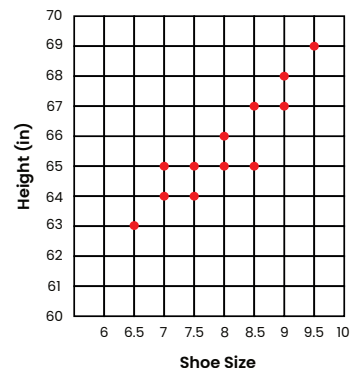
- Is there a positive correlation, negative correlation, or no correlation between temperature and hot chocolate sales?
Negative correlation
- Draw a line of best fit on the scatter plot.
- Circle any outliers on the scatter plot.

Create a scatter plot using the data below. Then answer the questions that follow.

The table below lists the heights (in inches) and shoe sizes of 12 women. Record the data as a scatter plot.

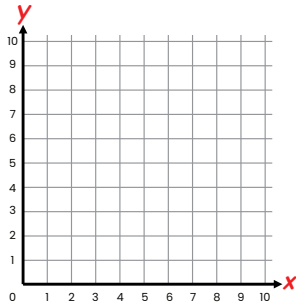
Name	Height	Shoe Size
Amy	64	7.5
Brenda	66	8
Claire	67	9
Diana	65	7
Ella	68	9
Fiona	69	9.5
Gina	67	8.5
Helen	65	7.5
Ivy	65	8
Joy	65	8.5
Kate	63	6.5
Lisa	64	7

Women's Shoe Size vs. Height



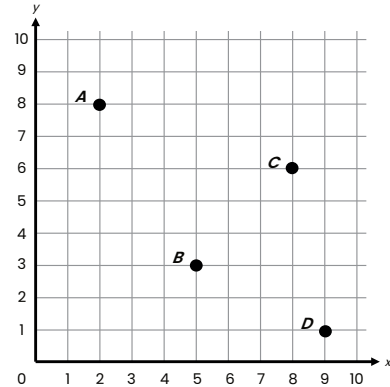
- Is there a positive correlation, negative correlation, or no correlation between height and shoe size?
Positive correlation
- Molly is 67 inches tall. Based on the trend in the scatter plot, is her shoe size more like to be 7 or 9? Explain.
Her shoe size is more likely to be a 9 because the other women that are her height have a size 8.5 or 9 shoe.

Answer the questions about the coordinate plane.



- Which comes first in an ordered pair: the y-coordinate or the x-coordinate?
x-coordinate
- What are the coordinates of the origin?
(0, 0)
- Is the y-axis horizontal or vertical? Label it on the graph above.
vertical
- Is the x-axis horizontal or vertical? Label it on the graph above.
horizontal
- Does the x-coordinate tell you how far to move up/down or left/right from the origin?
Left/right

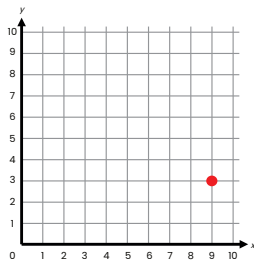
Write the coordinates of each point.



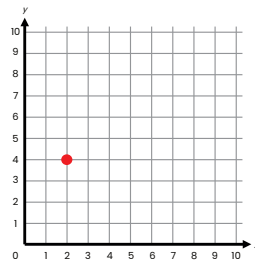
- | | |
|--|---|
| <p>EX Point A</p> <p>x-coordinate: <u>2</u></p> <p>y-coordinate: <u>8</u></p> <p>ordered pair: <u>(2, 8)</u></p> | <p>① Point B</p> <p>x-coordinate: <u>5</u></p> <p>y-coordinate: <u>3</u></p> <p>ordered pair: <u>(5, 3)</u></p> |
| <p>② Point C</p> <p>x-coordinate: <u>8</u></p> <p>y-coordinate: <u>6</u></p> <p>ordered pair: <u>(8, 6)</u></p> | <p>③ Point D</p> <p>x-coordinate: <u>9</u></p> <p>y-coordinate: <u>1</u></p> <p>ordered pair: <u>(9, 1)</u></p> |

Graph each point on the coordinate plane.

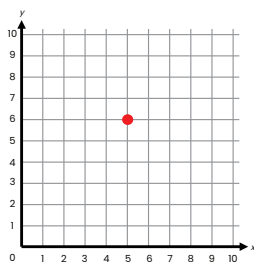
- ① (9, 3)



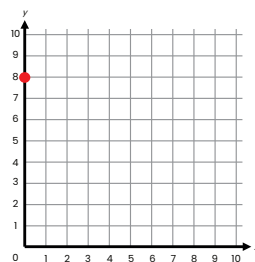
- ② (2, 4)



- ③ (5, 6)



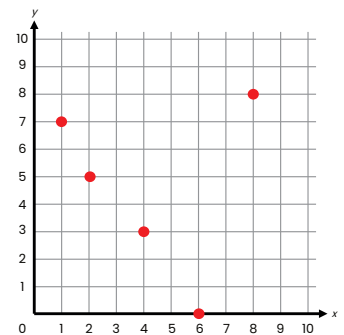
- ④ (0, 8)



Graph the points from the table on the coordinate plane.

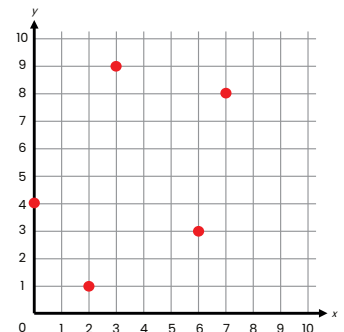
- ①

x	y
4	3
1	7
6	0
2	5
8	8



- ②

x	y
7	8
3	9
2	1
0	4
6	3

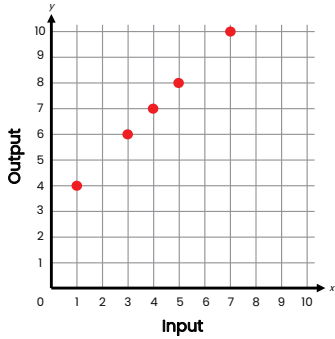


160 Coordinate Graphing

Complete each input/output table using the rule given. Then, graph the points on the coordinate plane.

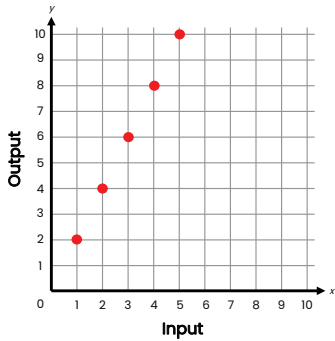
1 Rule: Add 3.

Input (x)	Output (y)
1	4
3	6
4	7
5	8
7	10



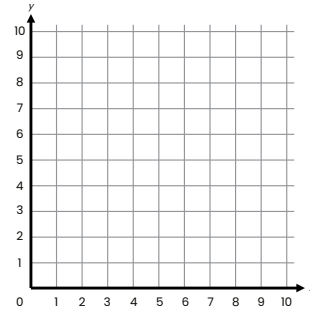
2 Rule: Multiply by 2.

Input (x)	Output (y)
1	2
2	4
3	6
4	8
5	10



Coordinate Graphing 161

Use the coordinate plane to help you answer each question.



- EX Start at the point (2, 5). Move 3 units to the right. At what point do you end? (5, 5)
- 1 Start at the point (8, 1). Move 2 units up. At what point do you end? (8, 3)
- 2 Start at the point (4, 4). Move 1 unit to the left. At what point do you end? (3, 4)
- 3 Start at the point (9, 8). Move 4 units down. At what point do you end? (9, 4)
- 4 Start at the point (5, 5). Move 1 unit up and 2 units to the left. At what point do you end? (3, 6)
- 5 Start at the point (7, 6). Move 2 units to the right and 3 units down. At what point do you end? (9, 3)

162 Coordinate Graphing

Write the coordinates of the vertices of each shape graphed on the coordinate plane. ****Note: vertices may be listed in any order.****

EX Vertices: (2, 7) (8, 7)
(2, 4) (8, 4)

1 Vertices: (3, 9) (6, 9)
(3, 1) (6, 1)

2 Vertices: (3, 2) (5, 9)
(7, 2)

3 Vertices: (4, 7) (8, 7)
(3, 4) (9, 4)

Coordinate Graphing 163

On each coordinate plane, plot each set of coordinates. Then, connect the points with line segments to draw a shape.

1 Draw a triangle with the vertices (1, 5), (6, 5), and (6, 10).

2 Draw a square with the vertices (2, 4), (2, 9), (7, 4), and (7, 9).

3 Draw a rectangle with the vertices (3, 1), (3, 6), (5, 1), and (5, 6).

4 Draw a triangle with the vertices (3, 8), (6, 5), and (9, 8).