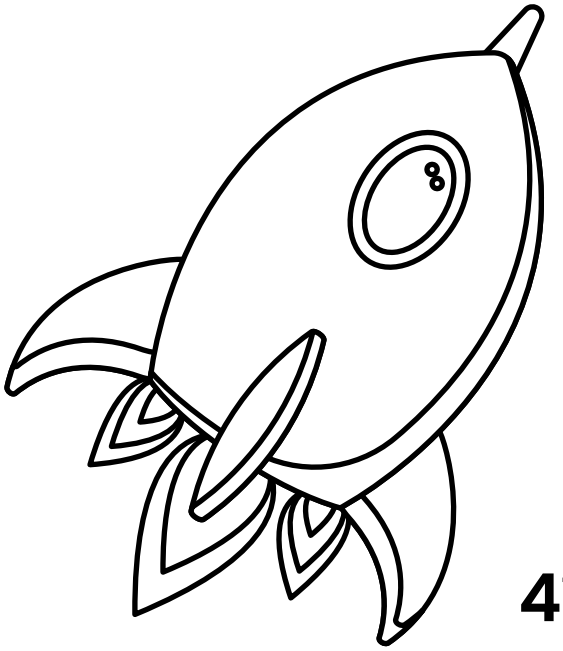


Blast Off to 5th Grade Math

4th to 5th Grade Transition Math Workbook

ANSWER KEY

Thank you for downloading! This is the answer key to accompany the workbook **Blast off to 5th Grade Math**. We hope this will be a great resource for your child to reinforce 4th grade math and build the skills needed for success in 5th grade.

If you have any further questions, please email us at hello@edventurelearning.com.

You can find us on social media @edventurelearning.

6 Place Value

For each number, write the digits in the correct columns in the place value chart.

	Hundred thousands	Ten thousands	Thousands	Hundreds	Tens	Ones
267,048	2	6	7	0	4	8
597,620	5	9	7	6	2	0
981,189	9	8	1	1	8	9
870,245	8	7	0	2	4	5
680,577	6	8	0	5	7	7
87,402	(0)	8	7	4	0	2
3,984	(0)	(0)	3	9	8	4
185,279	1	8	5	2	7	9

7 Place Value

Write each number in expanded form.

EX 247,931 = 200,000 + 40,000 + 7,000 + 900 + 30 + 1

1. 197,842 = 100,000 + 90,000 + 7,000 + 800 + 40 + 2
2. 85,217 = 80,000 + 5,000 + 200 + 10 + 7
3. 951,074 = 900,000 + 50,000 + 1,000 + 70 + 4
4. 2,986 = 2,000 + 900 + 80 + 6
5. 701,423 = 700,000 + 1,000 + 400 + 20 + 3

Change each expanded form into a number in standard form.

EX 300,000 + 10,000 + 7,000 + 600 + 80 + 9 = 317,689

6. 900,000 + 40,000 + 1,000 + 500 + 20 + 3 = 941,523
7. 400,000 + 70,000 + 3,000 + 200 + 10 + 6 = 473,316
8. 800,000 + 9,000 + 500 + 40 + 7 = 809,547
9. 70,000 + 2,000 + 800 + 50 + 3 = 72,853
10. 100,000 + 90,000 + 5,000 + 200 + 90 + 1 = 195,291

8 Place Value

Write each number in standard form.

1. Three hundred twenty-five thousand one hundred nineteen — 325,119
2. Sixteen thousand four hundred twenty-seven — 16,427
3. Five hundred sixty-three thousand two hundred seventy-five — 563,275
4. Ninety-three thousand three hundred fifty-four — 93,354
5. Two hundred sixteen thousand ninety-eight — 216,098

Write out the name of each number.

6. 810,057 — Eight hundred ten thousand fifty-seven
7. 251,603 — Two hundred fifty-one thousand six hundred three
8. 18,998 — Eighteen thousand nine hundred ninety-eight
9. 51,800 — Fifty-one thousand eight hundred
10. 4,777 — Four thousand seven hundred seventy-seven

9 Place Value

Write the value of the underlined digit in each number.

1. 156,**9**17 — 900
2. 340,80**7** — 7
3. **8**11,432 — 800,000
4. 948,4**1**3 — 10
5. 203,84**5** — 5
6. **6**87,610 — 600,000
7. 12**4**,746 — 4,000
8. 5**6**0,918 — 60,000
9. 391,**2**81 — 200
10. 7**3**2,086 — 30,000

Circle the number in each pair in which the digit **1** has a **greater** value.

11. (152,487) 351,290
12. (109,592) 415,983
13. 465,921 (864,519)
14. (598,172) 685,817
15. (912,345) 871,654
16. 873,019 (701,623)

Fill in the blanks with the correct numbers.

17. 6 hundreds = 60 tens
18. 7 thousands = 70 hundreds
19. 5 hundred thousands = 500 thousands
20. 2 ten thousands = 20,000 ones

10 Place Value

Fill in the correct bubble to answer each question.

Which number is 10 times greater than 50?

○ 5 ● 500 ○ 5,000 ○ 50,000

Which number is 100 times greater than 600?

○ 60 ○ 6,000 ● 60,000 ○ 600,000

Which number is 10 times less than 70,000

○ 70 ○ 700 ● 7,000 ○ 700,000

Which number is 100 times less than 8,000?

● 80 ○ 800 ○ 80,000 ○ 800,000

In which number is the 5 ten times greater than it is in 467,521?

○ 506,347 ● 705,872 ○ 459,780 ○ 972,358

Place Value 11

Write the number that answers each riddle.

All four of my digits are unique, even, and greater than zero.
My ones digit is twice as large as my thousands digit.
My tens digit is twice as large as my ones digit.
What number am I? 2,684

I am an even three-digit number with no repeating digits.
My ones and tens digits add up to my hundreds digit.
My ones digit is 5 less than my hundreds digit. I do not contain a 9.
What number am I? 752

I am a six-digit number.
The sum of all of my digits is 30.
All of my digits are the same.
What number am I? 555,555

I am a five-digit number with no repeating digits.
From left to right, each of my digits is one less than the one before.
The product of all my digits is 0.
What number am I? 43,210

I am a three-digit number and no digits are the same.
My hundreds digit divided by my tens digit equals by ones digit.
I am an odd number.
What number am I? 623

12 Ordering and Comparing

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

1. 78,203 79,132 78,567 78,211
   78,203 , 78,211 , 78,567 , 79,132
2. 109,876 110,726 19,456 126,012
   19,456 , 109,876 , 110,726 , 126,012
3. 9,872 9,910 9,867 998
   998 , 9,867 , 9,872 , 9,910
4. 268,347 259,103 301,467 268,493
   259,103 , 268,347 , 268,493 , 301,467
5. 567 576 5,001 4,252
   567 , 576 , 4,252 , 5,001
6. 21,473 20,945 21,479 20,049
   20,049 , 20,945 , 21,473 , 21,479
7. 4,621 4,639 4,599 4,703
   4,599 , 4,621 , 4,639 , 4,703

Ordering and Comparing 13

The table below shows the populations of 6 U.S. cities as of the 2020 census. Use this information to answer the questions.

City	Population
Austin	961,885
Boston	675,647
Denver	715,522
Detroit	639,111
San Francisco	873,965
Seattle	737,015

1. Which city has the greatest population?
   Austin
2. Which city has the smallest population?
   Detroit
3. Which cities have larger populations than Denver?
   Austin, San Francisco, Seattle
4. Which cities have lower populations than Seattle?
   Boston, Denver, Detroit
5. How many of the cities have populations greater than 700,000?
   4
6. How many of the cities have populations less than 800,000?
   4

14 Ordering and Comparing

Compare each pair of numbers using one of these symbols:

> greater than < less than = equal to

10,231	>	10,179	
75,981	>	75,962	
15,072	>	14,983	
512,623	<	512,624	
327,125	=	327,125	
892,753	>	892,573	
63,714	<	63,724	
46,917	<	47,021	
125,250	<	135,819	
9,521	=	9,521	
88,259	>	88,257	
54,312	>	45,438	
561,947	>	552,384	
444,444	>	88,888	

Ordering and Comparing 15

Answer each word problem.

The Wildcats, Tigers, Lions, and Jaguars were the top four teams in a basketball tournament. The Lions finished ahead of the Tigers but behind the Wildcats. The Wildcats beat the Jaguars and the Tigers. The Jaguars finished in 2nd place. In what order did the four teams finish?

1st place: Wildcats
2nd place: Jaguars
3rd place: Lions
4th place: Tigers

Ryan is shorter than Mark and taller than Kyle. Alan is taller than Mark. Write their names from tallest to shortest.

Tallest: Alan
Mark
Ryan
Shortest: Kyle

William Shakespeare's play *Hamlet* contains 30,557 words. Some of his other plays include *Othello* (26,450 words long), *Macbeth* (17,121 words long), and *Romeo and Juliet* (24,545 words long). Put these plays in order from shortest to longest.

Shortest: Macbeth
Romeo & Juliet
Othello
Longest: Hamlet

16 Rounding

Fill the in correct bubble to answer each question.

What is 2,874 rounded to the nearest ten?

● 2,870 ○ 2,880 ○ 2,900

What is 51,463 rounded to the nearest hundred?

○ 51,400 ○ 51,460 ● 51,500

Which of these numbers would round to 7,190 as the nearest ten?

○ 7,183 ● 7,188 ○ 7,195

Which of these numbers would round to 2,000 as the nearest ten?

○ 1,989 ● 2,003 ○ 2,011

Which of these numbers would round to 51,000 as the nearest thousand?

● 50,601 ○ 51,523 ○ 51,874

Rounding 17

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

589,126	
Ten	589,130
Hundred	589,100
Thousand	589,000
Ten Thousand	590,000
Hundred Thousand	600,000

817,649	
Ten	817,650
Hundred	817,600
Thousand	818,000
Ten Thousand	820,000
Hundred Thousand	800,000

703,862	
Ten	703,860
Hundred	703,900
Thousand	704,000
Ten Thousand	700,000
Hundred Thousand	700,000

428,391	
Ten	428,390
Hundred	428,400
Thousand	428,000
Ten Thousand	430,000
Hundred Thousand	400,000

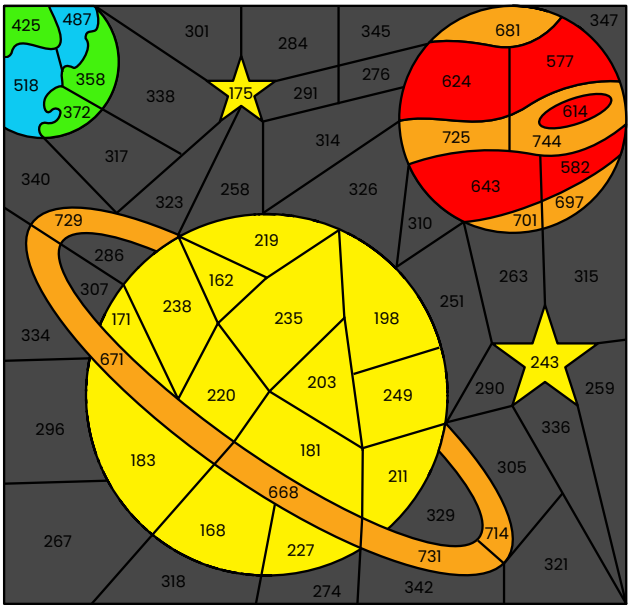
674,285	
Ten	674,290
Hundred	674,300
Thousand	674,000
Ten Thousand	670,000
Hundred Thousand	700,000

341,957	
Ten	341,960
Hundred	342,000
Thousand	342,000
Ten Thousand	340,000
Hundred Thousand	300,000

18 Rounding

Round each number to the nearest hundred and color using the key below.

YELLOW	200	BLACK	300
GREEN	400	BLUE	500
RED	600	ORANGE	700



Rounding 19

Write a whole number that matches each description on the line.

1. The largest number that rounds to 54,000 as the nearest thousand — 54,499
2. A three-digit number that rounds to 1,000 as the nearest hundred — 999 (Answers may vary)
3. The smallest number that rounds to 6,470 as the nearest ten — 6,465
4. A number that rounds up to 3,000 as the nearest ten — 2,999 (Answers may vary)
5. A number that rounds down to 150,000 as the nearest ten thousand — 154,000 (Answers may vary)
6. A two-digit number that rounds to 100 as the nearest ten — 99 (Answers may vary)
7. The greatest number that rounds to 46,000 as the nearest thousand — 46,499
8. The smallest number that rounds to 870,000 as the nearest ten thousand — 865,000

20 Number Patterns

Find the addition or subtraction rule for each sequence and write the number that comes next in the pattern.

EX 15, 20, 25, 30, 35
Rule: Add 5

1. 220, 230, 240, 250, 260
Rule: Add 10

2. 4, 8, 12, 16, 20
Rule: Add 4

3. 18, 15, 12, 9, 6
Rule: Subtract 3

4. 111, 117, 123, 129, 135
Rule: Add 6

5. 48, 40, 32, 24, 16
Rule: Subtract 8

6. 50, 43, 36, 29, 22
Rule: Subtract 7

Number Patterns 21

Fill in the missing number in each pattern.

EX 6, 8, 10, 12, 14

1. 36, 30, 24, 18, 12
2. 75, 65, 55, 45, 35
3. 23, 28, 33, 38, 43
4. 22, 33, 44, 55, 66
5. 96, 92, 88, 84, 80

Fill in the correct bubble to answer each question.

6. The first number in a pattern is 18. The rule is add 6. Which of these statements is true?
   - ● Every number in the pattern is divisible by 3.
   - ○ Every number in the pattern is divisible by 9.

7. The first number in a pattern is 85. The rule is subtract 7. Which of these statements is true?
   - ○ Every number in the pattern is odd.
   - ● Every other number in the pattern is odd.

8. The first number in a pattern is 12. The rule is add 8. Which of these statements is true?
   - ● Every number in the pattern is a multiple of 4.
   - ○ Every number in the pattern is multiple of 8.

22 Number Patterns

Find the multiplication or division rule for each sequence and write the number that comes next in the pattern.

EX 3, 6, 12, 24
Rule: Multiply by 2

1. 1, 3, 9, 27
Rule: Multiply by 3

2. 6, 60, 600, 6,000
Rule: Multiply by 10

3. 64, 16, 4, 1
Rule: Divide by 4

4. 32, 16, 8, 4
Rule: Divide by 2

5. 45,000, 4,500, 450, 45
Rule: Divide by 10

6. 1, 2, 4, 8
Rule: Multiply by 2

Number Patterns 23

Fill in the missing number in each pattern.

EX 1, 6, 36, 216

1. 81, 27, 9, 3

2. 5, 10, 20, 40

3. 500, 100, 20, 4

4. 2, 8, 32, 128

5. 48, 24, 12, 6

Fill in the correct bubble to answer each question.

6. The first number in a pattern is 3 and the rule is multiply by 4. What will be the third number in the pattern?
   - (●) 48
   - ( ) 64

7. The first three numbers in a pattern are 2, 4, and 8. Abigail says the fourth number will be 10. Is she correct?
   - ( ) Yes, because the rule is to add 2.
   - (●) No, because the rule is to multiply by 2.

8. The rule for a pattern that starts with 5 is to multiply by 3. Jason says the first three numbers are 5, 15, 45. Is he correct?
   - (●) Yes, he is correct.
   - ( ) No, he is not correct.

24 Number Patterns

Below are input-output tables. Performing the rule on each input number results in the output number. Complete each input-output table.

EX **Rule:** Add 3.

Input	Output
4	7
6	9
10	13
11	14

1. **Rule:** Subtract 7.

Input	Output
12	5
16	9
19	12
22	15

2. **Rule:** Add 6.

Input	Output
0	6
4	10
7	13
21	27

3. **Rule:** Multiply by 9.

Input	Output
2	18
3	27
6	54
9	81

4. **Rule:** Divide by 5.

Input	Output
15	3
25	5
30	6
40	8

5. **Rule:** Subtract 12.

Input	Output
24	12
26	14
32	20
37	25

Number Patterns 25

Write the rule shown by each input-output table.

EX **Rule:** Divide by 2

Input	Output
4	2
6	3
8	4
12	6

1. **Rule:** Multiply by 4

Input	Output
2	8
4	16
5	20
7	28

2. **Rule:** Add 10

Input	Output
7	17
13	23
24	34
56	66

3. **Rule:** Subtract 5

Input	Output
11	6
15	10
23	18
31	26

4. **Rule:** Divide by 3

Input	Output
9	3
15	5
24	8
36	12

5. **Rule:** Add 8

Input	Output
5	13
7	15
22	30
46	54

28 Addition and Subtraction

Estimate each sum or difference by rounding to the nearest hundred. Then solve.

EX Estimate: 8,000

1,345 → 1,300
+6,702 → +6,700
8,047 → 8,000

1 Estimate: 900

209 → 200
+ 738 → + 700
947 → 900

2 Estimate: 3,700

2,673 → 2,700
+ 952 → + 1,000
3,625 → 3,700

3 Estimate: 7,600

4,322 → 4,300
+ 3,287 → + 3,300
7,609 → 7,600

4 Estimate: 600

978 → 1,000
− 394 → − 400
584 → 600

5 Estimate: 7,300

7,654 → 7,700
− 359 → − 400
7,295 → 7,300

6 Estimate: 300

3,281 → 3,300
− 3,018 → −3,000
263 → 300

7 Estimate: 2,300

8,749 → 8,700
− 6,437 → −6,400
2,312 → 2,300

29 Addition and Subtraction

Fill in the correct bubble to answer each question.

A school district has two middle schools. One has 873 students and the other has 921. Which of these is the best estimate for the total number of middle school students in the district?

○ 1,700 ● 1,800 ○ 1,900 ○ 2,000

Marco sold his house for $197,800 and bought a new house for $256,500. Which of these is the best estimate of the difference in cost between the two houses?

○ $55,000 ○ $56,000 ○ $57,000 ● $59,000

58,431 people attended a football game. The following weekend, 63,978 people came to the next game. Which is the best estimate for the total number of people at the two football games?

○ 110,000 ○ 112,000 ○ 121,000 ● 122,000

Last year, 739 pets were adopted from a local animal shelter. This year, 851 pets were adopted from the shelter. Which is the best estimate of how many more pets were adopted this year?

○ 100 ● 110 ○ 120 ○ 130

A group raised $8,247 with a walk-a-thon and $1,788 with a bake sale. Which is the best estimate of the total amount of money raised?

○ $9,000 ○ $9,500 ● $10,000 ○ $10,500

30 Addition and Subtraction

Find each sum.

1 5,802 + 4,789 = 10,591	2 6,725 + 194 = 6,919	3 257 + 463 = 720	4 15,027 + 3,647 = 18,674
5 3,294 + 7,023 = 10,317	6 5,487 + 636 = 6,123	7 1,246 + 537 = 1,783	8 157 + 892 = 1,049
9 9,026 + 4,270 = 13,296	10 4,202 + 182 = 4,384	11 3,154 + 2,016 = 5,170	12 3,658 + 587 = 4,245
13 2,021 + 9,423 = 11,444	14 702 + 8,244 = 8,946	15 9,849 + 4,072 = 13,921	16 9,214 + 708 = 9,922
17 8,437 + 689 = 9,126	18 12,138 + 9,122 = 21,260	19 6,198 + 571 = 6,769	20 11,984 + 3,301 = 15,285
21 1,225 + 2,016 = 3,241	22 9,212 + 17,715 = 26,927	23 71,615 + 951 = 72,566	24 15,197 + 16,184 = 31,381

31 Addition and Subtraction

Find each difference.

1 9,175 − 542 = 8,633	2 8,642 − 2,486 = 6,156	3 324 − 196 = 128	4 10,752 − 6,273 = 4,479
5 7,632 − 4,515 = 3,117	6 662 − 321 = 341	7 6,237 − 5,163 = 1,074	8 4,441 − 361 = 4,080
9 6,517 − 5,215 = 1,302	10 8,539 − 954 = 7,585	11 5,560 − 2,327 = 3,233	12 11,465 − 728 = 10,737
13 9,108 − 617 = 8,491	14 2,218 − 1,974 = 244	15 4,586 − 4,072 = 514	16 81,975 − 7,465 = 74,510
17 3,660 − 3,159 = 501	18 16,468 − 5,183 = 11,285	19 7,946 − 334 = 7,612	20 2,298 − 2,079 = 219
21 77,125 − 50,119 = 27,006	22 10,189 − 6,473 = 3,716	23 5,432 − 843 = 4,589	24 9,834 − 6,372 = 3,462

32 Addition and Subtraction

Fill in the missing digits in each problem.

Ex
$$\begin{array}{r} 1,\,6\,2\,\boxed{8} \\ +\,\boxed{6}\,3\,5\,2 \\ \hline 7,\,\boxed{9}\,8\,0 \end{array}$$

1
$$\begin{array}{r} 1,\,3\,\boxed{7}\,5 \\ +\,7,\,2\,4\,4 \\ \hline \boxed{8}\,6\,1\,\boxed{9} \end{array}$$

2
$$\begin{array}{r} 9,\,\boxed{7}\,5\,1 \\ -\,6\,4\,2\,\boxed{8} \\ \hline 3,\,3\,\boxed{2}\,3 \end{array}$$

3
$$\begin{array}{r} 8,\,4\,1\,\boxed{5} \\ -\,\boxed{4}\,6\,0\,8 \\ \hline 3,\,\boxed{8}\,0\,7 \end{array}$$

4
$$\begin{array}{r} 2,\,9\,\boxed{4}\,4 \\ +\,\boxed{5}\,4\,1\,4 \\ \hline 8,\,3\,5\,\boxed{8} \end{array}$$

5
$$\begin{array}{r} 4,\,9\,2\,\boxed{6} \\ +\,3,\,\boxed{1}\,2\,7 \\ \hline 8,\,0\,\boxed{5}\,3 \end{array}$$

6
$$\begin{array}{r} 7,\,5\,0\,\boxed{9} \\ -\,\boxed{1}\,2\,7\,3 \\ \hline 6,\,\boxed{2}\,3\,6 \end{array}$$

7
$$\begin{array}{r} 5,\,6\,4\,7 \\ -\,\boxed{3}\,1\,8\,\boxed{2} \\ \hline 2,\,\boxed{4}\,6\,5 \end{array}$$

8
$$\begin{array}{r} 3,\,8\,9\,\boxed{4} \\ +\,5,\,\boxed{2}\,0\,3 \\ \hline 9,\,0\,\boxed{9}\,7 \end{array}$$

9
$$\begin{array}{r} 6,\,4\,8\,\boxed{1} \\ -\,\boxed{2}\,3\,6\,4 \\ \hline 4,\,1\,\boxed{1}\,7 \end{array}$$

33 Addition and Subtraction

Add or subtract to solve each word problem.

Anita traveled 865 miles from Phoenix, Arizona to Denver, Colorado. Then, she traveled another 521 miles to Salt Lake City, Utah. How many total miles did she travel?

865
+ 521
1,386

1,386 miles

William the Conqueror became the first king of England in 1066. Charles III became king in 2022. How many years passed between these two events?

2,022
-1,066
956

956 years

The Nile River is 6,695 km long. The Amazon River is 6,400 km long. What is the combined length of the two rivers?

6,695
+6,400
13,095

13,095 km

34 Addition and Subtraction

Find each sum.

1
$$\begin{array}{r} 6,147 \\ 652 \\ +\ 971 \\ \hline 7,770 \end{array}$$

2
$$\begin{array}{r} 2,470 \\ 3,528 \\ +\ 223 \\ \hline 6,221 \end{array}$$

3
$$\begin{array}{r} 5,802 \\ 921 \\ +\ 88 \\ \hline 6,811 \end{array}$$

4
$$\begin{array}{r} 2,918 \\ 902 \\ +\ 107 \\ \hline 3,927 \end{array}$$

5
$$\begin{array}{r} 1,304 \\ 1,427 \\ +\ 114 \\ \hline 2,845 \end{array}$$

6
$$\begin{array}{r} 712 \\ 8,164 \\ +\ 122 \\ \hline 8,998 \end{array}$$

7
$$\begin{array}{r} 6,198 \\ 512 \\ +\ 131 \\ \hline 6,841 \end{array}$$

8
$$\begin{array}{r} 9,899 \\ 7,816 \\ +\ 482 \\ \hline 18,197 \end{array}$$

9
$$\begin{array}{r} 4,040 \\ 993 \\ +\ 248 \\ \hline 5,281 \end{array}$$

10
$$\begin{array}{r} 978 \\ 3,058 \\ +\ 110 \\ \hline 4,146 \end{array}$$

11
$$\begin{array}{r} 1,690 \\ 1,749 \\ +\ 307 \\ \hline 3,746 \end{array}$$

12
$$\begin{array}{r} 3,204 \\ 1,862 \\ +\ 2,517 \\ \hline 7,583 \end{array}$$

35 Addition and Subtraction

Add or subtract to solve each word problem.

The population of Centerville is 29,789. The population of Springfield is 87,468. What is the combined population of these two towns?

29,789
+87,468
117,257

117,257 people

The first book in a series is 374 pages long. The second book is 391 pages long. The final book is 403 pages long. What is the total number of pages in the series?

374
391
+ 403
1,168

1,168 pages

Mount Everest is 29,302 feet tall. Mount Kilimanjaro is 19,341 feet tall. How much taller is Mount Everest than Mount Kilimanjaro?

29,302
-19,341
9,961

9,961 feet

36 Multiplication

Find each product.

2 × 2 = 4	3 × 6 = 18	6 × 2 = 12	12 × 8 = 96	11 × 6 = 66	10 × 4 = 40	2 × 9 = 18	11 × 4 = 44
9 × 9 = 81	3 × 3 = 9	4 × 7 = 28	3 × 7 = 21	7 × 2 = 14	12 × 7 = 84	5 × 11 = 55	10 × 3 = 30
4 × 5 = 20	10 × 10 = 100	4 × 4 = 16	5 × 8 = 40	8 × 4 = 32	3 × 8 = 24	2 × 8 = 16	12 × 6 = 72
10 × 9 = 90	5 × 6 = 30	11 × 3 = 33	5 × 5 = 25	6 × 9 = 54	5 × 9 = 45	9 × 4 = 36	3 × 9 = 27
4 × 6 = 24	11 × 10 = 110	6 × 7 = 42	12 × 12 = 144	6 × 6 = 36	0 × 7 = 0	6 × 1 = 6	10 × 5 = 50
11 × 9 = 99	6 × 8 = 48	12 × 2 = 24	7 × 8 = 56	2 × 3 = 6	7 × 7 = 49	8 × 11 = 88	11 × 7 = 77
2 × 5 = 10	12 × 10 = 120	10 × 8 = 80	2 × 4 = 8	8 × 9 = 72	3 × 4 = 12	8 × 8 = 64	12 × 1 = 12

Multiplication 37

Use multiplication to solve each word problem.

1. During a football game, each of the two teams has 11 players on the field at once. How many players are on the field in all during a game?

   11 × 2 = 22 players

2. Ellen pays $10 per month to subscribe to a media streaming service. What is her total cost per year?

   $10 × 12 = $120

3. A passenger train has seats arranged in groups of 4. If a train car contains 8 of these groups, how many passengers can it seat?

   4 × 8 = 32 passengers

4. A viola has 4 strings. How many viola strings are there in an orchestra that includes 10 violas?

   4 × 10 = 40 strings

5. Eggs comes in cartons of 12. How many eggs are in 6 cartons?

   12 × 6 = 72 players

38 Multiplication

List the first five multiples of each number given.

EX Multiples of 3: 3, 6, 9, 12, 15

1. Multiples of 7: 7, 14, 21, 28, 35
2. Multiples of 2: 2, 4, 6, 8, 10
3. Multiples of 10: 10, 20, 30, 40, 50
4. Multiples of 8: 8, 16, 24, 32, 40
5. Multiples of 12: 12, 24, 36, 48, 60
6. Multiples of 11: 11, 22, 33, 44, 55
7. Multiples of 100: 100, 200, 300, 400, 500
8. Multiples of 5: 5, 10, 15, 20, 25
9. Multiples of 20: 20, 40, 60, 80, 100
10. Multiples of 50: 50, 100, 150, 200, 250

Multiplication 39

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

4 and 6 Multiples of 4: 4, 8, 12 ... Multiples of 6: 6, 12... The LCM of 4 and 6 is 12.	12 and 9 Multiples of 12: 12, 24, 36... Multiples of 9: 9, 18, 27, 36... The LCM of 12 and 9 is 36.
10 and 25 Multiples of 10: 10, 20, 30, 40, 50... Multiples of 25: 25, 50... The LCM of 10 and 25 is 50.	3 and 8 Multiples of 3: 3, 6, 9, 12, 15, 18, 21, 24... Multiples of 8: 8, 16, 24... The LCM of 3 and 8 is 24.
30 and 40 Multiples of 30: 30, 60, 90, 120... Multiples of 40: 40, 80, 120... The LCM of 30 and 40 is 120.	24 and 36 Multiples of 24: 24, 48, 72... Multiples of 36: 36, 72... The LCM of 24 and 36 is 72.

40 Multiplication

Multiples of 10: Find each product.

1. 80 × 9 = 720
2. 5 × 70 = 350
3. 20 × 6 = 120
4. 4 × 30 = 320
5. 10 × 8 = 80
6. 2 × 90 = 180
7. 60 × 3 = 180
8. 7 × 40 = 280

Multiples of 100: Find each product.

9. 3 × 100 = 300
10. 400 × 7 = 2,800
11. 4 × 200 = 800
12. 700 × 8 = 5,600
13. 5 × 300 = 1,500
14. 800 × 9 = 7,200
15. 6 × 500 = 3,000
16. 900 × 2 = 1,800

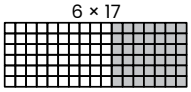
Multiples of 1,000: Find each product.

17. 5,000 × 2 = 10,000
18. 3 × 2,000 = 6,000
19. 7,000 × 8 = 56,000
20. 5 × 4,000 = 20,000
21. 9,000 × 4 = 36,000
22. 7 × 6,000 = 42,000
23. 3,000 × 6 = 18,000
24. 9 × 8,000 = 72,000

Multiplication 41

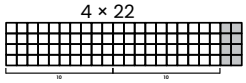
Use the array to help you multiply using the distributive property.

1. 6 × 17



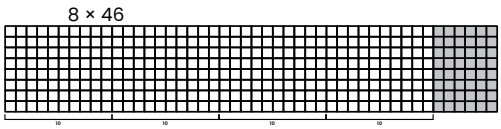
6 × 17 = (6 × 10) + (6 × 7)
6 × 17 = (60) + (42)
6 × 17 = 102

2. 4 × 22



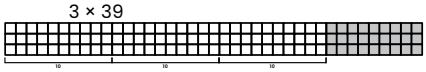
4 × 22 = (4 × 20) + (4 × 2)
4 × 22 = (80) + (8)
4 × 22 = 88

3. 8 × 46



8 × 46 = (8 × 40) + (8 × 6)
8 × 46 = (320) + (48)
8 × 46 = 368

4. 3 × 39



3× 39 = (3 × 30) + (3 × 9)
3 × 39 = (90) + (27)
3 × 39 = 117

42 Multiplication

Use the area model to find each product. First, find the area of each rectangle. Then, find the total area. (Note: models are not drawn to scale.)

EX 273 × 5 = ?

	200	70	3
5	1,000	350	15

1,000 + 350 + 15 = 1,365
So, 273 × 5 = 1,365

1. 324 × 4 = ?

	300	20	4
4	1,200	80	16

1,200 + 80 + 16 = 1,296
So, 324 × 4 = 1,296

2. 532 × 7 = ?

	500	30	2
7	3,500	210	14

3,500 + 210 + 14 = 3,724
So, 532 × 7 = 3,724

3. 495 × 6 = ?

	400	90	5
6	2,400	540	30

2,400 + 540 + 30 = 2,970
So, 495 × 6 = 2,970

4. 629 × 3 = ?

	600	20	9
3	1,800	60	27

1,800 + 60 + 27 = 1,887
So, 629 × 3 = 1,887

5. 718 × 9 = ?

	700	10	8
9	6,300	90	72

6,300 + 90 + 72 = 6,462
So, 718 × 9 = 6,462

Multiplication 43

Use the distributive property to find each product.

1. 615 × 6 = (600 × 6) + (10 × 6) + (5 × 6)
615 × 6 = (3,600) + (60) + (30)
615 × 6 = 3,690

2. 1,327 × 2 = (1,000 × 2) + (300 × 2) + (20 × 2) + (7 × 2)
1,327 × 2 = (2,000) + (600) + (40) + (14)
1,327 × 2 = 2,654

3. 98 × 3 = (90 × 3) + (8 × 3)
98 × 3 = 270 + 24
98 × 3 = 294

4. 814 × 5 = (800 × 5) + (10 × 5) + (4 × 5)
814 × 5 = 4,000 + 50 + 20
814 × 5 = 4,070

5. 2,476 × 4 = (2,000 × 4) + (400 × 4) + (70 × 4) + (6 × 4)
2,476 × 4 = 8,000 + 1,600 + 280 + 24
2,476 × 4 = 9,904

44 Multiplication

Find each product using the standard algorithm.

54 × 2 = 108	67 × 3 = 201	29 × 5 = 145	32 × 7 = 224	48 × 4 = 192
912 × 8 = 7,296	754 × 9 = 6,786	310 × 2 = 620	192 × 7 = 1,344	835 × 6 = 5,010
3,942 × 3 = 11,826	1,483 × 5 = 7,415	8,032 × 4 = 32,128	2,743 × 9 = 24,687	4,561 × 8 = 36,488
19 × 2 = 38	74 × 5 = 370	82 × 8 = 656	96 × 3 = 288	27 × 6 = 162
206 × 3 = 618	498 × 6 = 2,988	513 × 9 = 4,617	672 × 4 = 2,688	186 × 7 = 1,302
5,621 × 4 = 22,484	6,850 × 7 = 47,950	7,214 × 2 = 14,428	9,076 × 5 = 45,380	1,439 × 8 = 11,512

Multiplication 45

Multiply to solve each word problem.

1. A certain book has 233 pages. How many total pages are in 5 copies of the same book?

   233 × 5 = 1,165 pages

2. A dance school offers 8 ballet classes each week. If each class accepts a maximum of 12 students, what is the greatest number of students that can take a ballet class each week?

   8 × 12 = 96 students

3. A ream of copy paper contains 500 sheets of paper. How many sheets of paper are in 7 reams?

   500 × 7 = 3,500 sheets of paper

4. Tea bags come in a box of 72 bags per box. A case contains 8 boxes. How many tea bags are in a case?

   72 × 8 = 576 tea bags

5. Priya drives 325 miles round trip to visit her grandmother. If she makes this trip 3 times per year, how many miles will she drive?

   325 × 3 = 975 miles

46 Multiplication

Use the area model to find each product. First, find the area of each rectangle. Then, find the total area. (Note: models are not drawn to scale.)

EX 36 × 25 = ?

	30	6
20	600	120
5	150	30

600 + 120 + 150 + 30 = 900

So, 36 × 25 = 900

1. 43 × 82 = ?

	40	3
80	3,200	240
2	80	6

3,200 + 240 + 80 + 6 = 3,526

So, 43 × 82 = 3,526

2. 51 × 63 = ?

	50	1
60	3,000	60
3	150	3

3,000 + 60 + 150 + 3 = 3,213

So, 51 × 63 = 3,213

3. 95 × 18 = ?

	90	5
10	900	50
8	720	40

900 + 50 + 720 + 40 = 1,710

So, 95 × 18 = 1,710

Multiplication 47

Use the distributive property to find each product.

1. 15 × 26 = (10 × 20) + (5 × 20) + (10 × 6) + (6 × 5)
   15 × 26 = (200) + (100) + (60) + (30)
   15 × 26 = 390

2. 39 × 47 = (30 × 40) + (9 × 40) + (30 × 7) + (9 × 7)
   39 × 47 = (1,200) + (360) + (210) + (63)
   39 × 47 = 1,833

3. 81 × 23 = (80 × 20) + (1 × 20) + (80 × 3) + (1 × 3)
   81 × 23 = 1,600 + 20 + 240 + 3
   81 × 23 = 1,863

4. 14 × 65 = (10 × 60) + (4 × 60) + (10 × 5) + (4 × 5)
   14 × 65 = 600 + 240 + 50 + 20
   14 × 65 = 910

5. 76 × 54 = (70 × 50) + (6 × 50) + (70 × 4) + (6 × 4)
   76 × 54 = 3,500 + 300 + 280 + 24
   76 × 54 = 4,104

48 Multiplication

Find each product using the standard algorithm.

42 × 73 = 126 + 2940 = 3,066	14 × 65 = 70 + 840 = 910	83 × 49 = 747 + 3320 = 4,067	27 × 91 = 27 + 2430 = 2,457	66 × 82 = 132 + 5280 = 5,412
87 × 13 = 261 + 870 = 1,131	25 × 37 = 175 + 750 = 925	92 × 54 = 368 + 4600 = 4,968	56 × 67 = 392 + 3360 = 3,752	74 × 18 = 592 + 740 = 1,332
38 × 29 = 342 + 760 = 1,102	19 × 24 = 76 + 380 = 456	28 × 36 = 168 + 840 = 1,008	32 × 45 = 160 + 1280 = 1,440	46 × 53 = 138 + 2300 = 2,438
59 × 72 = 118 + 4130 = 4,248	64 × 88 = 512 + 5120 = 5,632	77 × 95 = 385 + 6930 = 7,315	93 × 15 = 465 + 930 = 1,395	17 × 23 = 51 + 340 = 391

Multiplication 49

Multiply to solve each word problem.

1. A fenced-in area measures 28 feet by 16 feet. What is the area inside the fence?

   28 × 16 = 448 square feet

2. A grocery store sells eggs in cartons of 18. How many eggs are in 50 cartons?

   50 × 18 = 900 eggs

3. Each student in Mrs. Miller's class has a box of 24 crayons. If there are 22 students in the class, how many crayons do they have all together?

   24 × 22 = 528 crayons

4. 36 students are competing in a 55-meter dash. How many meters do they run all together?

   36 × 55 = 1,980 meters

5. Justin's car has a gas tank that holds 16 gallons of gas. If his car can travel an average of 23 miles per gallon, how many miles can he drive with a full tank of gas?

   16 × 23 = 368 miles

50 Division

Find each quotient.

1. 81 ÷ 9 = 9	2. 48 ÷ 6 = 8	3. 70 ÷ 10 = 7
4. 20 ÷ 4 = 5	5. 35 ÷ 5 = 7	6. 54 ÷ 9 = 6
7. 21 ÷ 7 = 3	8. 32 ÷ 4 = 8	9. 14 ÷ 2 = 7
10. 36 ÷ 6 = 6	11. 64 ÷ 8 = 8	12. 56 ÷ 7 = 8
13. 60 ÷ 12 = 5	14. 24 ÷ 6 = 4	15. 40 ÷ 5 = 8
16. 42 ÷ 6 = 7	17. 24 ÷ 3 = 8	18. 36 ÷ 4 = 9
19. 66 ÷ 11 = 6	20. 25 ÷ 5 = 5	21. 49 ÷ 7 = 7
22. 63 ÷ 9 = 7	23. 18 ÷ 3 = 6	24. 28 ÷ 4 = 7
25. 45 ÷ 5 = 9	26. 72 ÷ 9 = 8	27. 27 ÷ 3 = 9
28. 30 ÷ 6 = 5	29. 18 ÷ 2 = 9	30. 144 ÷ 12 = 12

Division 51

Use division to solve each word problem.

1. Evelyn has a goal of biking a total of 35 miles this week biking every day. How many miles, on average, would she need to bike each day to reach her goal?

   35 ÷ 5 = 7 miles

2. Greg has a pack of 24 candy canes. He divides them between 8 of his friends. How many candy canes does he give to each friend?

   24 ÷ 8 = 3 candy canes

3. A bag of dry dog food contains 36 cups of food. If Nadine feeds her dog 3 cups of dog food each day, how many days will one bag of dog food last?

   36 ÷ 3 = 12 days

4. Kevin bought sandwiches for his coworkers for lunch. Kevin spent $88 on 11 sandwiches. How much did each sandwich cost?

   $88 ÷ 11 = $8

5. A case of paper towels includes several 6-packs of paper towel rolls, for a total of 72 rolls in the case. How many 6-packs are in the case?

   72 ÷ 6 = 12 packs

52 Division

Circle YES or NO to indicate whether each number is divisible by the number given.

1. Is 21 divisible by 2? **YES** **(NO)**
2. Is 72 divisible by 6? **(YES)** **NO**
3. Is 50 divisible by 3? **YES** **(NO)**
4. Is 45 divisible by 8? **YES** **(NO)**
5. Is 52 divisible by 4? **(YES)** **NO**
6. Is 84 divisible by 7? **(YES)** **NO**

Select ALL of the numbers that are factors of the given number.

7. Which of these numbers are factors of 42?
   - (●) 3
   - (●) 6
   - (●) 7
   - ( ) 9
8. Which of these numbers are factors of 26?
   - (●) 2
   - ( ) 4
   - ( ) 12
   - (●) 13
9. Which of these numbers are factors of 38?
   - ( ) 5
   - ( ) 7
   - ( ) 14
   - (●) 19
10. Which of these numbers are factors of 51?
    - ( ) 2
    - (●) 3
    - ( ) 7
    - ( ) 8

Division 53

List the factors of each number. Then, circle whether the number is prime or composite.

1. Factors of 16: 1, 2, 4, 8, 16 — PRIME **(COMPOSITE)**
2. Factors of 13: 1, 13 — **(PRIME)** COMPOSITE
3. Factors of 27: 1, 3, 9, 27 — PRIME **(COMPOSITE)**
4. Factors of 20: 1, 2, 4, 5, 10, 20 — PRIME **(COMPOSITE)**
5. Factors of 31: 1, 31 — **(PRIME)** COMPOSITE

6. Is 23 a prime number? Explain how you know. Yes, because 23 doesn't have any factors other than 1 and itself.
7. Is 33 a prime number? Explain how you know. No, because 33 has factors other than itself and 1 (3 and 11).
8. Is 4 a prime number? Explain how you know. No, because 4 has a factor other than itself and 1 (2).

54 Division

List the factor pairs for each number given.

EX) 12

1	12
2	6
3	4

1) 20

1	20
2	10
4	5

2) 36

1	36
2	18
3	12
4	9
6	6

3) 27

1	27
3	9

4) 32

1	32
2	16
4	8

5) 24

1	24
2	12
3	8
4	6

6) 45

1	45
3	15
5	9

7) 30

1	30
2	15
3	10
5	6

8) 48

1	48
2	24
3	16
4	12
6	8

Division 55

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

16 and 28	21 and 35
Factors of 16: 1, 2, 4, 8, 16	Factors of 21: 1, 3, 7, 21
Factors of 28: 1, 2, 4, 7, 14, 28	Factors of 35: 1, 5, 7, 35
The GCF of 16 and 28 is 4.	The GCF of 21 and 35 is 7.
15 and 60	**18 and 45**
Factors of 15: 1, 3, 5, 15	Factors of 18: 1, 2, 3, 6, 9, 18
Factors of 60: 1, 2, 3, 4, 5, 6, 10, 12, 15, 20, 30, 60	Factors of 45: 1, 3, 5, 9, 15, 45
The GCF of 15 and 60 is 15.	The GCF of 18 and 45 is 9.
42 and 64	**10 and 25**
Factors of 42: 1, 2, 3, 6, 7, 14, 21, 42	Factors of 10: 1, 2, 5, 10
Factors of 64: 1, 2, 4, 8, 16, 32, 64	Factors of 25: 1, 5, 25
The GCF of 42 and 64 is 2.	The GCF of 10 and 25 is 5.

56 Division

Use the area model and the distributive property to find each quotient. First, find the missing side lengths. Then, add to find the total quotient. (Note: models are not drawn to scale.)

EX 112 ÷ 8 = ?

	10	4
8	80	32

112 ÷ 8 = (80 ÷ 8) + (32 ÷ 8)
112 ÷ 8 = (10) + (4)
112 ÷ 8 = 14

1 630 ÷ 6 = ?

	100	5
6	600	30

630 ÷ 6 = (600 ÷ 6) + (30 ÷ 6)
630 ÷ 6 = (100) + (5)
630 ÷ 6 = 105

2 265 ÷ 5 = ?

	50	3
5	250	15

265 ÷ 5 = (250 ÷ 5) + (15 ÷ 5)
265 ÷ 5 = (50) + (3)
265 ÷ 5 = 53

3 124 ÷ 4 = ?

	25	6
4	100	24

124 ÷ 4 = (100 ÷ 4) + (24 ÷ 4)
124 ÷ 4 = (25) + (6)
124 ÷ 4 = 31

57 Division

Use the distributive property to find each quotient.

1 375 ÷ 3 = (300 ÷ 3) + (75 ÷ 3)
375 ÷ 3 = (100) + (25)
375 ÷ 3 = 125

2 459 ÷ 9 = (450 ÷ 9) + (9 ÷ 9)
459 ÷ 9 = (50) + (1)
459 ÷ 9 = 51

3 756 ÷ 7 = (700 ÷ 7) + (56 ÷ 7)
756 ÷ 7 = 100 + 8
756 ÷ 7 = 108

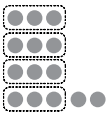
4 68 ÷ 2 = (60 ÷ 2) + (8 ÷ 2)
68 ÷ 2 = 30 + 4
68 ÷ 2 = 34

5 488 ÷ 8 = (480 ÷ 8) + (8 ÷ 8)
488 ÷ 8 = 60 + 1
488 ÷ 8 = 61

58 Division

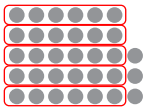
Use the array to help you find each quotient and remainder.

EX



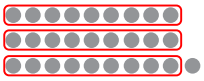
14 ÷ 3 = 4 R 2

1



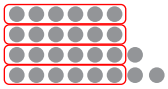
33 ÷ 6 = 5 R 3

2



28 ÷ 9 = 3 R 1

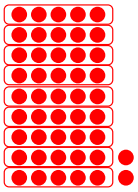
3



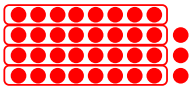
27 ÷ 6 = 4 R 3

Draw an array to help you find each quotient and remainder.

4 47 ÷ 5 = 9 R 2



5 35 ÷ 8 = 4 R 3



59 Division

Find each quotient and remainder.

EX 76 ÷ 9 = ?
How many times can 9 go into 76?
9 × 8 = 72
How much is left over?
76 - 72 = 4
So, 76 ÷ 9 = 8 R 4

1 59 ÷ 8 = ?
How many times can 8 go into 59?
8 × 7 = 56
How much is left over?
59 - 56 = 3
So, 59 ÷ 8 = 7 R 3

2 50 ÷ 4 = ?
How many times can 4 go into 50?
4 × 12 = 48
How much is left over?
50 - 48 = 2
So, 50 ÷ 4 = 12 R 2

3 48 ÷ 7 = ?
How many times can 7 go into 48?
7 × 6 = 42
How much is left over?
48 - 42 = 6
So, 48 ÷ 7 = 6 R 6

4 67 ÷ 10 = 6 R 7

5 53 ÷ 5 = 10 R 3

60 Division

Find each quotient using long division.

EX $6\overline{)74}$ → 12 R2

1. Divide the first digit of the dividend (7) by the divisor (6). Write the answer above the 7.
2. Multiply 1 by 6. Write the answer below the 7.
3. Subtract.
4. Bring down the 4 from the ones place.
5. Divide 14 by 6. Write the answer above the ones place.
6. Multiply 2 by 6. Write the answer below the 14.
7. Subtract. If there are more digits in the divisor, repeat the process. If not, the answer is the remainder. Write it on top.

1. $3\overline{)87}$ = 29
2. $5\overline{)92}$ = 18 R2
3. $2\overline{)73}$ = 36 R1
4. $4\overline{)651}$ = 162 R3
5. $7\overline{)803}$ = 114 R5
6. $3\overline{)946}$ = 315 R1
7. $8\overline{)9,723}$ = 1,215 R3
8. $2\overline{)8,724}$ = 4,362
9. $3\overline{)7,058}$ = 2,352 R2

61 Division

Find each quotient using long division.

EX $4\overline{)293}$ → 73 R1

1. If the first digit of the dividend is smaller than the divisor (here, 2 is smaller than 4), divide the first two digits by the divisor (29 ÷ 4). Write the answer above the second place value.
2. Multiply 7 by 4. Write the answer below the 29.
3. Subtract.
4. Bring down the next place value.
5. Continue the rest of the division process normally.

1. $8\overline{)63}$ = 7 R7
2. $9\overline{)59}$ = 6 R5
3. $7\overline{)46}$ = 6 R4
4. $5\overline{)327}$ = 65 R2
5. $2\overline{)196}$ = 98
6. $8\overline{)707}$ = 88 R3
7. $3\overline{)1,896}$ = 632
8. $5\overline{)2,409}$ = 481 R4
9. $6\overline{)5,921}$ = 986 R5

62 Division

Use any division method to solve each word problem.

It takes Brianna 5 hours to drive 225 miles to visit her cousin. What is her average driving speed in miles per hour?	225 ÷ 5 = 45 miles per hour
Jim bought an identical watch to gift to each of his three brothers. The total cost of the watches was $417. What was the price of each watch?	$417 ÷ 3 = $139
A bakery makes 504 cupcakes. They package them in boxes of 6. How many boxes will they fill?	504 ÷ 6 = 84 cupcakes
Gina and Liz are roommates. They need to purchase a new refrigerator for their home and decide to split the cost evenly. If the refrigerator will cost $1,498, how much will each spend?	$1,498 ÷ 2 = $749

63 Division

Use any division method to solve each word problem.

Chase has $35 to spend on trading cards, which cost $4 per pack. If he buys the maximum number of packs he can, how much money will he have left over?	35 ÷ 4 = 8 R 3 Chase will have $3 left over.
There are 126 kids staying in cabins at a summer camp. Each cabin can hold up to 10 campers. How many cabins are needed to house the campers?	126 ÷ 10 = 12 R 6 The camp will need 13 cabins.
An office needs to purchase a stapler for each of its 203 employees. If staplers are sold in packs of 6, how many extra staplers will the office have after purchasing enough?	203 ÷ 6 = 33 R 5 There will be 5 extra staplers.
47 people are waiting in line for a ride at a fair. The ride can hold 8 passengers at a time. How many times will the ride have to run for everyone in line to get a turn?	47 ÷ 8 = 5 R 7 The ride will run 6 times.

64 Mixed Operations

Solve each word problem using the correct operation.

1. Shannon and Reagan wear devices that track how many steps they take in a day. Yesterday, Shannon took 9,482 steps. Reagan took 874 fewer steps than Shannon. How many steps did Reagan take?

   9,482 - 874 = 8,608 steps

2. A caterer spent $252 on chicken to serve at an event. If chicken cost $4 per pound, how many pounds of chicken did the caterer buy?

   $252 ÷ $4 = 63 pounds

3. The average temperature in a city in January was 39°F. The average temperature in June was twice as high. What was the average temperature in June?

   39 × 2 = 78°F

4. A pumpkin pie recipe says that the pie should be baked at 425°F for the first 15 minutes, and then baked at 350°F for another 50 minutes. What is the total baking time?

   15 + 50 = 65 minutes (or 1 hour, 5 minutes)

5. Sydney has 30 stickers. If she gives an equal number of stickers to four of her friends, how many stickers will be left over?

   30 ÷ 4 = 7 R 2
   There will be 2 stickers left over.

65 Mixed Operations

Compare the value of each pair of expressions using one of these symbols:

> greater than < less than = equal to

72 ÷ 6	>	66 - 55	13 × 6	=	34 + 44
			78		78
37 × 10	<	400 - 20	112 ÷ 7	<	9 × 2
370		380	16		18
346 + 51	>	416 - 87	54 × 8	>	47 × 9
397		329	432		423
135 ÷ 9	=	105 ÷ 7	289 - 104	<	18 × 12
15		15	185		216
1,386 ÷ 6	>	52 × 4	95 - 21	>	9 × 8
231		208	74		72
879 + 423	>	41 × 29	68 ÷ 4	=	88 - 71
1,302		1,189	17		17

66 Mixed Operations

In each equation, a letter stands for an unknown number. Find the value of the unknown number, then write a related fact to show how you know.

Ex 3 × **n** = 75
n = 25
Related fact: 75 ÷ 3 = 25

1. 162 + **p** = 217
   p = 55
   Related fact: 217 - 162 = 55

2. 84 ÷ **m** = 6
   m = 14
   Related fact: 84 ÷ 6 = 14

3. 879 - **a** = 432
   a = 447
   Related fact: 879 - 432 = 447

4. **b** + 49 = 531
   b = 482
   Related fact: 531 - 49 = 482

5. **q** × 7 = 147
   q = 21
   Related fact: 147 ÷ 7 = 21

6. **d** - 397 = 204
   d = 601
   Related fact: 397 + 204 = 601

7. **c** ÷ 4 = 126
   c = 504
   Related fact: 126 × 4 = 504

67 Mixed Operations

Choose the equation that best represents each word problem.

Nadia bought 3 sheets of stamps at the post office. There were a total of 60 stamps. If **n** represents the number of stamps on each sheet, which equation could you use to find **n**?

○ 3 + **n** = 60 ○ 60 × 3 = **n** ● **n** = 60 ÷ 3

Shawn ran 10 km. Jason ran 7 more km than Shawn. If **d** represents the distance that Jason ran (in km), which equation could you use to find **d**?

○ 10 - 7 = **d** ● 10 + 7 = **d** ○ 7 - **d** = 10

8 groups of students each have to give a 5-minute presentation to the class. If **t** represents the total time the all the presentations will take, which equation could you use to find **t**?

○ **t** = 8 + 5 ● 5 × 8 = **t** ○ 8 × **t** = 5

Michael and his friends spend $84 on 6 movie tickets. If **p** represents the price of each movie ticket, which equation could you use to find **p**?

○ 84 - 6 = **p** ● 6 × **p** = 84 ○ 84 = **p** ÷ 6

Kyle has 107 trading cards and Cameron has 96. If **c** represents the number of cards Kyle and Cameron have all together, which equation could you use to find **c**?

○ 96 + **c** = 107 ○ 107 - 96 = **c** ● **c** = 107 + 96

68 Mixed Operations

Find the pair of numbers that matches each description.

EX Which two numbers have a sum of 5 and a product of 6?

2 and 3

1. Which two numbers have a product of 48 and a difference of 2?

8 and 6

2. Which two numbers have a quotient of 4 and a sum of 30?

24 and 6

3. Which two numbers have a product of 32 and a quotient of 2?

8 and 4

4. Which two numbers have a sum of 15 and a difference of 11?

13 and 2

5. Which two numbers have a sum of 7 and a product of 12?

3 and 4

6. Which two numbers have a product of 16 and a difference of 0?

4 and 4

Mixed Operations 69

Use the four operations to answer the questions based on the figures below.

1. What is the length of the side marked **x**?

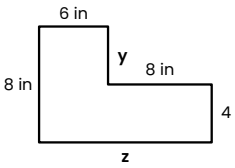
9 cm

2. What is the perimeter of the rectangle?

30 cm

3. If the rectangle were cut in half, what would the area of each piece be?

27 cm²



4. What is the length of the side marked **z**?

14 in

5. What is the value of **y**?

4 in

6. What is the perimeter of the figure?

44 in

7. What is the area of the figure?

80 in²

70 Mixed Operations

Write two equations to solve each word problem.

1. Jackie is reading a 232-page book. So far, she has read 190 pages. She wants to finish the book in the next 3 days by reading an equal number of pages each day. How many pages should she read each day?

232 − 190 = 42 pages left

42 ÷ 3 = 14 pages per day

2. In football, a touchdown is worth 6 points and a field goal is worth 3 points. A team scored 4 touchdowns and 1 field goal during a game. What was their total score?

6 × 4 = 24 points from touchdowns

24 + 3 = 27 total points

3. An animated short film is 7 minutes long. If each second of the animation contains 24 frames, how many frames are in the entire film?

7 × 60 = 420 seconds in 7 minutes

420 × 24 = 10,080 total frames

4. Ryan bikes the 8 miles to work at an average speed of 12 miles per hour. After riding for half an hour, how many more miles will Ryan need to ride to get to work?

12 ÷ 2 = 6 miles ridden in half an hour

8 − 6 = 2 miles remaining to get to work

Mixed Operations 71

Solve each multi-step word problem.

1. Hot dogs come in packs of 10, and buns come in packs of 8. Carl needs to buy enough to have at least 45 hot dogs and buns for a cookout. If Carl uses all the hot dogs that he buys, how many extra buns will be left over?

45 ÷ 10 = 4 R 5, so Carl needs 5 packs of hot dogs.
5 packs × 10 = 50 hot dogs, so Carl also needs 50 buns.
50 − 8 = 6 R 2, so Carl will have 2 buns left over.

2. A family of four orders dinner from a restaurant. They buy a burger and a drink for each person, and they decide to share two orders of fries between them. If burgers cost $6 each, fries cost $3 each, and drinks cost $2 each, how much does the family spend in all?

$6 + $2 = $8 for each burger and drink
$8 × 4 = $32 for burgers and drinks for 4 people
$32 + $3 = $35 total cost

3. Bella was born in 2012 and her mom, Michelle, was born in 1984. Bella's grandmother was the same age when Michelle was born that Michelle was when Bella was born. In what year was Bella's grandmother born?

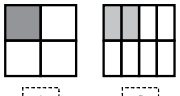
2012 − 1984 = 28 (Michelle's age when Bella was born)
1984 − 28 = 1956, so Bella's grandmother was born in 1956.

4. Apples come in bags of 8 apples each. Tina buys 3 bags of apples. She needs 7 apples to make an apple pie. If she makes 2 apple pies, how many apples will she have left over?

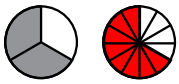
8 × 3 = 24 apples purchased
7 × 2 = 14 apples needed to make pies
24 − 14 = 10 apples left over

74 Equivalent Fractions

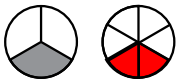
Color in shares of the second model to make a fraction equivalent to the one shown in the first model. Then, complete the equation.

EX  $\frac{1}{4} = \frac{2}{8}$

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

2  $\frac{2}{3} = \frac{8}{12}$

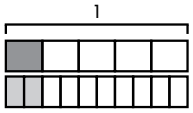
3  $\frac{2}{4} = \frac{6}{12}$

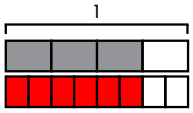
4  $\frac{1}{3} = \frac{2}{6}$

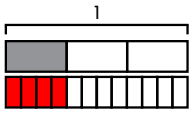
5  $\frac{2}{5} = \frac{4}{10}$

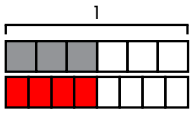
75 Equivalent Fractions

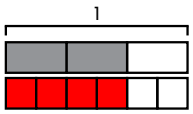
Color in shares on the bottom bar model to make a fraction equivalent to the one shown in the shaded portion of the top. Then, complete the equation.

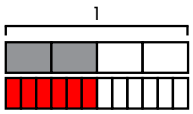
EX  $\frac{1}{5} = \frac{2}{10}$

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

2  $\frac{1}{3} = \frac{4}{12}$

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

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

5  $\frac{2}{4} = \frac{6}{12}$

76 Equivalent Fractions

Fill in the missing numerators to show equivalent fractions.

$\frac{1}{2} = \frac{2}{4} = \frac{3}{6} = \frac{4}{8} = \frac{5}{10} = \frac{6}{12}$	$\frac{2}{2} = \frac{4}{4} = \frac{6}{6} = \frac{8}{8} = \frac{10}{10} = \frac{12}{12}$
$\frac{1}{3} = \frac{2}{6} = \frac{3}{9} = \frac{4}{12}$	$\frac{2}{3} = \frac{4}{6} = \frac{6}{9} = \frac{8}{12}$
$\frac{3}{3} = \frac{6}{6} = \frac{9}{9} = \frac{12}{12}$	
$\frac{1}{4} = \frac{2}{8} = \frac{3}{12}$	$\frac{2}{4} = \frac{4}{8} = \frac{6}{12}$
$\frac{3}{4} = \frac{6}{8} = \frac{9}{12}$	$\frac{4}{4} = \frac{8}{8} = \frac{12}{12}$
$\frac{1}{5} = \frac{2}{10}$	$\frac{2}{5} = \frac{4}{10}$
$\frac{3}{5} = \frac{6}{10}$	$\frac{4}{5} = \frac{8}{10}$
$\frac{5}{5} = \frac{10}{10}$	
$\frac{1}{6} = \frac{2}{12}$	$\frac{2}{6} = \frac{4}{12}$
$\frac{3}{6} = \frac{6}{12}$	$\frac{4}{6} = \frac{8}{12}$
$\frac{5}{6} = \frac{10}{12}$	$\frac{6}{6} = \frac{12}{12}$

Show whether each pair of fractions is equal (=) or unequal (≠).

EX $\frac{2}{3} \neq \frac{3}{5}$ 1 $\frac{3}{4} = \frac{6}{8}$ 2 $\frac{1}{2} = \frac{5}{10}$

3 $\frac{4}{12} \neq \frac{1}{4}$ 4 $\frac{5}{6} = \frac{10}{12}$ 5 $\frac{3}{8} \neq \frac{1}{6}$

77 Equivalent Fractions

Fill in missing numerators to show equivalent fractions.

EX $\frac{2}{10} = \frac{20}{100}$ 1 $\frac{3}{10} = \frac{30}{100}$ 2 $\frac{9}{10} = \frac{90}{100}$

3 $\frac{7}{10} = \frac{70}{100}$ 4 $\frac{4}{10} = \frac{40}{100}$ 5 $\frac{1}{10} = \frac{10}{100}$

6 $\frac{50}{100} = \frac{5}{10}$ 7 $\frac{80}{100} = \frac{8}{10}$ 8 $\frac{50}{100} = \frac{5}{10}$

Fill in the missing denominators to show equivalent fractions.

EX $\frac{2}{5} = \frac{4}{10}$ 1 $\frac{3}{4} = \frac{6}{8}$ 2 $\frac{4}{6} = \frac{2}{3}$

3 $\frac{5}{6} = \frac{10}{12}$ 4 $\frac{1}{3} = \frac{3}{9}$ 5 $\frac{2}{4} = \frac{6}{12}$

6 $\frac{8}{10} = \frac{4}{5}$ 7 $\frac{2}{3} = \frac{6}{9}$ 8 $\frac{2}{6} = \frac{1}{3}$

9 $\frac{3}{5} = \frac{6}{10}$ 10 $\frac{1}{4} = \frac{3}{12}$ 11 $\frac{4}{8} = \frac{1}{2}$

78 Equivalent Fractions

For each fraction, find the greatest common factor (GCF) of the numerator and denominator. Then, divide both the numerator and denominator by the GCF to find an equivalent fraction that is in lowest terms.

EX $\frac{9}{12}$ = ?

GCF of 9 and 12: 3

9 ÷ 3 = 3

12 ÷ 3 = 4

$\frac{9}{12}$ in lowest terms = $\frac{3}{4}$

1 $\frac{8}{10}$ = ?

GCF of 8 and 10: 2

8 ÷ 2 = 4

10 ÷ 2 = 5

$\frac{8}{10}$ in lowest terms = $\frac{4}{5}$

2 $\frac{6}{9}$ = ?

GCF of 6 and 9: 3

6 ÷ 3 = 2

9 ÷ 3 = 3

$\frac{6}{9}$ in lowest terms = $\frac{2}{3}$

3 $\frac{4}{8}$ = ?

GCF of 4 and 8: 4

4 ÷ 4 = 1

8 ÷ 4 = 2

$\frac{4}{8}$ in lowest terms = $\frac{1}{2}$

4 $\frac{2}{6}$ = ?

GCF of 2 and 6: 2

2 ÷ 2 = 1

6 ÷ 2 = 3

$\frac{2}{6}$ in lowest terms = $\frac{1}{3}$

5 $\frac{8}{12}$ = ?

GCF of 8 and 12: 4

8 ÷ 4 = 2

12 ÷ 4 = 3

$\frac{8}{12}$ in lowest terms = $\frac{2}{3}$

Equivalent Fractions 79

Solve each word problem involving equivalent fractions.

1 A pizza is cut into 12 slices. Marie eats 2 slices of the pizza. What fraction of the pizza does she eat (in lowest terms)?

$\frac{2}{12} = \frac{1}{6}$ of the pizza

2 There are 8 students in a group. 6 of them are girls. What fraction of the students in the group are girls (in lowest terms)?

$\frac{6}{8} = \frac{3}{4}$ of the students are girls

3 David has a goal of reading 10 books. So far, he has read 6 books. What fraction of his goal has he completed (in lowest terms)?

$\frac{6}{10} = \frac{3}{5}$ of his goal

4 There are 6 pens in a container. $\frac{1}{2}$ of them are blue. How many pens are blue?

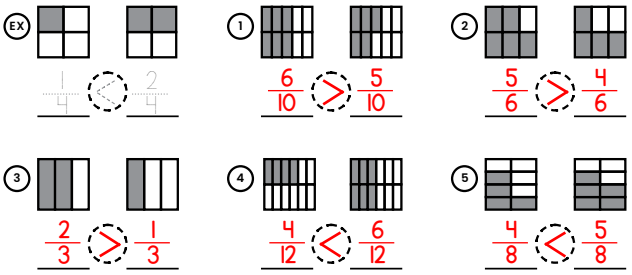
$\frac{1}{2} = \frac{3}{6}$ 3 of the pens are blue.

5 There are 12 crayons in a box. $\frac{1}{3}$ of the crayons are broken. How many crayons are broken?

$\frac{1}{3} = \frac{4}{12}$ 4 of the crayons are broken.

80 Comparing Fractions

Write the fraction shown by the shaded region of each model. Then, use > (greater than) or < (less than) to compare each pair of fractions.



EX $\frac{1}{4} < \frac{2}{4}$ **1** $\frac{6}{10} > \frac{5}{10}$ **2** $\frac{5}{6} > \frac{4}{6}$

3 $\frac{2}{3} > \frac{1}{3}$ **4** $\frac{4}{12} < \frac{6}{12}$ **5** $\frac{4}{8} < \frac{5}{8}$

Use > or < to compare each pair of fractions.

6 $\frac{9}{12} > \frac{7}{12}$ **7** $\frac{2}{5} < \frac{3}{5}$ **8** $\frac{2}{6} < \frac{4}{6}$

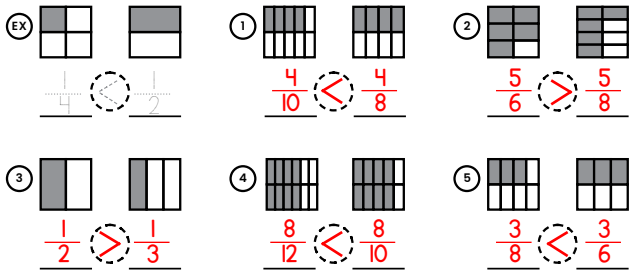
9 $\frac{3}{4} > \frac{2}{4}$ **10** $\frac{1}{8} < \frac{3}{8}$ **11** $\frac{4}{10} < \frac{6}{10}$

12 Write a rule for comparing fractions that have the same denominator.

If two fractions have the same denominator, the fraction with the larger numerator is larger.

Comparing Fractions 81

Write the fraction shown by the shaded region of each model. Then, use > (greater than) or < (less than) to compare each pair of fractions.



EX $\frac{1}{4} < \frac{1}{2}$ **1** $\frac{4}{10} < \frac{4}{8}$ **2** $\frac{5}{6} > \frac{5}{8}$

3 $\frac{1}{2} > \frac{1}{3}$ **4** $\frac{8}{12} < \frac{8}{10}$ **5** $\frac{3}{8} < \frac{3}{6}$

Use > or < to compare each pair of fractions.

6 $\frac{9}{10} > \frac{9}{12}$ **7** $\frac{3}{5} < \frac{3}{4}$ **8** $\frac{4}{8} < \frac{4}{6}$

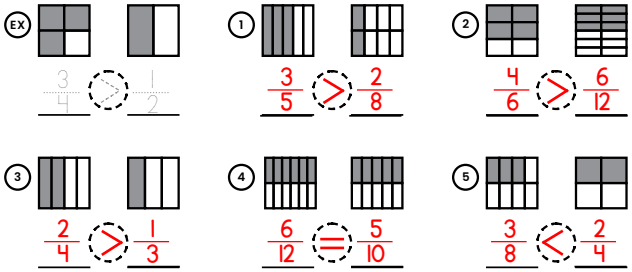
9 $\frac{2}{3} > \frac{2}{4}$ **10** $\frac{1}{6} < \frac{1}{2}$ **11** $\frac{5}{10} < \frac{5}{8}$

12 Write a rule for comparing fractions that have the same numerator.

If two fractions have the same numerator, the fraction with the larger denominator is smaller.

82 Comparing Fractions

Write the fraction shown by the shaded region of each model. Then, use >, <, or = to compare each pair of fractions.



EX $\frac{3}{4} > \frac{1}{2}$

1 $\frac{3}{5} > \frac{2}{8}$

2 $\frac{4}{6} > \frac{6}{12}$

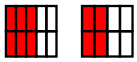
3 $\frac{2}{4} > \frac{1}{3}$

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

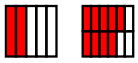
5 $\frac{3}{8} < \frac{2}{4}$

Draw a model to help you compare each pair of fractions using >, <, or =.

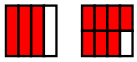
6 $\frac{6}{10} > \frac{4}{8}$



7 $\frac{2}{5} < \frac{9}{12}$

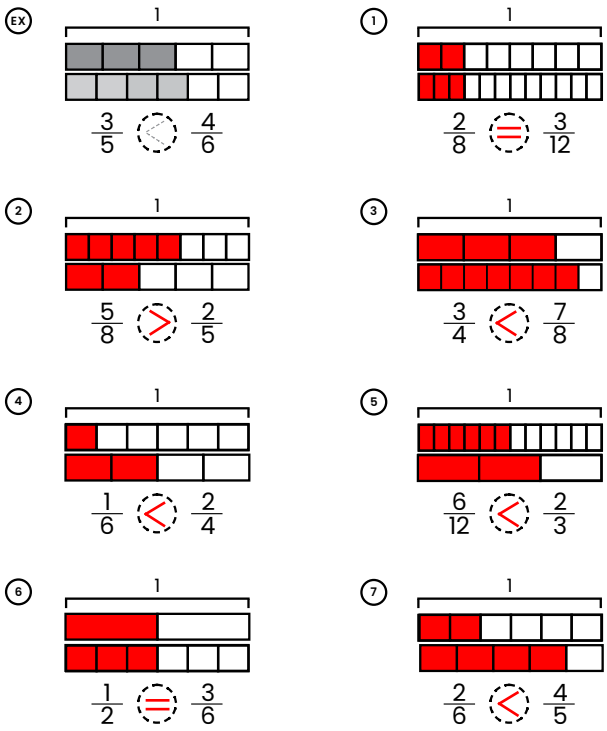


8 $\frac{3}{4} < \frac{7}{8}$



Comparing Fractions 83

Fill in a bar model to represent each fraction. Then, compare each pair of fractions using >, <, or =.



84 Comparing Fractions

Find the least common multiple (LCM) of the denominators of each pair of fractions. Re-write each fraction as an equivalent fraction with this number as the common denominator. Then, compare using >, <, or =.

EX $\frac{5}{6} ? \frac{3}{4}$ LCM of 6 and 4: 12

$\frac{5}{6} = \frac{10}{12}$ $\frac{3}{4} = \frac{9}{12}$

$\frac{10}{12} > \frac{9}{12}$

So, $\frac{5}{6} > \frac{3}{4}$

1 $\frac{2}{3} ? \frac{1}{2}$ LCM of 3 and 2: 6

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

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

So, $\frac{2}{3} > \frac{1}{2}$

2 $\frac{3}{8} ? \frac{2}{4}$ LCM of 8 and 4: 8

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

$\frac{3}{8} < \frac{4}{8}$

So, $\frac{3}{8} < \frac{2}{4}$

3 $\frac{1}{2} ? \frac{3}{5}$ LCM of 2 and 5: 10

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

$\frac{5}{10} < \frac{6}{10}$

So, $\frac{1}{2} < \frac{3}{5}$

4 $\frac{8}{12} ? \frac{2}{3}$ LCM of 12 and 3: 12

$\frac{8}{12} = \frac{8}{12}$ $\frac{2}{3} = \frac{8}{12}$

$\frac{8}{12} = \frac{8}{12}$

So, $\frac{8}{12} = \frac{2}{3}$

5 $\frac{2}{4} ? \frac{1}{3}$ LCM of 4 and 3: 12

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

$\frac{6}{12} > \frac{4}{12}$

So, $\frac{2}{4} > \frac{1}{3}$

Comparing Fractions 85

Use a common denominator to compare each pair of fractions with the symbols >, <, or =.

1 $\frac{1}{2} > \frac{2}{5}$

$\frac{5}{10}$ $\frac{4}{10}$

2 $\frac{2}{3} < \frac{3}{4}$

$\frac{8}{12}$ $\frac{9}{12}$

3 $\frac{7}{10} > \frac{3}{5}$

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

4 $\frac{3}{4} > \frac{7}{12}$

$\frac{9}{12}$ $\frac{7}{12}$

5 $\frac{2}{6} > \frac{1}{4}$

$\frac{4}{12}$ $\frac{3}{12}$

6 $\frac{2}{4} < \frac{6}{8}$

$\frac{4}{8}$ $\frac{6}{8}$

7 $\frac{3}{8} < \frac{1}{2}$

$\frac{3}{8}$ $\frac{4}{8}$

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

$\frac{4}{12}$ $\frac{4}{12}$

86 Comparing Fractions

Put each group of fractions in order from least to greatest.

1. $\frac{1}{2}$ $\frac{3}{4}$ $\frac{2}{5}$ → $\frac{2}{5}$, $\frac{1}{2}$, $\frac{3}{4}$

2. $\frac{3}{5}$ $\frac{1}{3}$ $\frac{7}{8}$ → $\frac{1}{3}$, $\frac{3}{5}$, $\frac{7}{8}$

3. $\frac{2}{3}$ $\frac{5}{6}$ $\frac{7}{12}$ → $\frac{7}{12}$, $\frac{2}{3}$, $\frac{5}{6}$

4. $\frac{1}{4}$ $\frac{3}{10}$ $\frac{1}{5}$ → $\frac{1}{5}$, $\frac{1}{4}$, $\frac{3}{10}$

5. $\frac{5}{8}$ $\frac{11}{12}$ $\frac{3}{4}$ → $\frac{5}{8}$, $\frac{3}{4}$, $\frac{11}{12}$

6. $\frac{4}{5}$ $\frac{5}{6}$ $\frac{2}{3}$ → $\frac{2}{3}$, $\frac{4}{5}$, $\frac{5}{6}$

7. $\frac{1}{6}$ $\frac{5}{12}$ $\frac{3}{5}$ → $\frac{1}{6}$, $\frac{5}{12}$, $\frac{3}{5}$

8. $\frac{1}{4}$ $\frac{2}{3}$ $\frac{2}{5}$ → $\frac{1}{4}$, $\frac{2}{5}$, $\frac{2}{3}$

Comparing Fractions 87

Answer each question based on the recipe shown below.

Chocolate Chip Cookies

- 2 cups flour
- $\frac{1}{2}$ cup butter
- $\frac{1}{2}$ teaspoon baking soda
- $\frac{1}{4}$ teaspoon salt
- $\frac{3}{4}$ cup sugar
- $\frac{1}{2}$ cup brown sugar
- 1 egg
- 1 teaspoon vanilla extract
- 1 cup chocolate chips

1. Does the recipe call for more butter or sugar?

   sugar

2. Does the recipe call for more baking soda or vanilla extract?

   vanilla extract

3. Does the recipe call for more salt or baking soda?

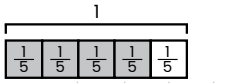
   baking soda

4. Does the recipe call for less sugar or brown sugar?

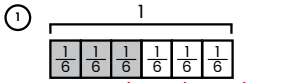
   brown sugar

88 Add and Subtract Fractions

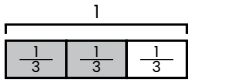
Show each fraction as the sum of unit fractions. Use the bar model to help.

EX. 

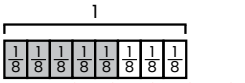
$\frac{4}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$

1. 

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

2. 

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

3. 

$\frac{5}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$

Show each fraction as the sum of unit fractions.

4. $\frac{2}{6} = \frac{1}{6} + \frac{1}{6}$

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

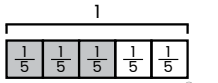
6. $\frac{6}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$

7. $\frac{5}{10} = \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10}$

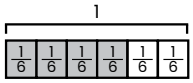
8. $\frac{7}{12} = \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12}$

Add and Subtract Fractions 89

Find the sum of the unit fractions. Use the bar model to help.

EX. 

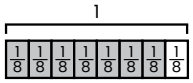
$\frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \frac{3}{5}$

1. 

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

2. 

$\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$ or $\frac{1}{2}$

3. 

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

Find the sum of the unit fractions.

4. $\frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{5}{6}$

5. $\frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} = \frac{7}{10}$

6. $\frac{1}{9} + \frac{1}{9} + \frac{1}{9} + \frac{1}{9} = \frac{4}{9}$

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

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

90 Add and Subtract Fractions

Use the model to help you add the fractions.

EX 

$\frac{3}{12} + \frac{5}{12} = \frac{8}{12}$

1 

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

2 

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

3 

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

Use two different colors to show the fractions on the model. Then, add.

EX 

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

4 

$\frac{2}{10} + \frac{4}{10} = \frac{6}{10}$ or $\frac{3}{5}$

5 

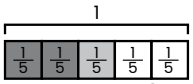
$\frac{3}{8} + \frac{4}{8} = \frac{7}{8}$

6 

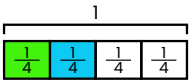
$\frac{1}{6} + \frac{3}{6} = \frac{4}{6}$ or $\frac{2}{3}$

91 Add and Subtract Fractions

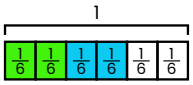
Use two different colors to show the fractions on the bar model. Then, add.

EX 

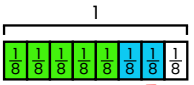
$\frac{2}{5} + \frac{1}{5} = \frac{3}{5}$

1 

$\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$ or $\frac{1}{2}$

2 

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

3 

$\frac{5}{8} + \frac{2}{8} = \frac{7}{8}$

Add each pair of fractions.

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

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

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

7 $\frac{3}{10} + \frac{5}{10} = \frac{8}{10}$ or $\frac{4}{5}$

8 $\frac{4}{12} + \frac{7}{12} = \frac{11}{12}$

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

10 Write a rule for adding fractions with the same denominator.

Leave the denominator the same and add the numerators.

92 Add and Subtract Fractions

Write each fraction as the sum of two other fractions in two different ways.

Answers may vary

EX $\frac{5}{6} = \frac{1}{6} + \frac{4}{6}$

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

1 $\frac{9}{12} = \frac{4}{12} + \frac{5}{12}$

$\frac{9}{12} = \frac{1}{12} + \frac{8}{12}$

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

$\frac{7}{10} = \frac{6}{10} + \frac{1}{10}$

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

$\frac{4}{8} = \frac{2}{8} + \frac{2}{8}$

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

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

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

$\frac{10}{12} = \frac{2}{12} + \frac{8}{12}$

6 $\frac{9}{10} = \frac{3}{10} + \frac{6}{10}$

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

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

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

8 $\frac{8}{12} = \frac{1}{12} + \frac{7}{12}$

$\frac{8}{12} = \frac{2}{12} + \frac{6}{12}$

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

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

93 Add and Subtract Fractions

Use addition to solve each word problem.

1 Derek reads $\frac{2}{8}$ of his book on Saturday and another $\frac{1}{8}$ of the book on Sunday. What fraction of the book does he read over the two days?

Derek reads $\frac{3}{8}$ of the book.

2 There are 12 girls on a basketball team. 7 of them have brown hair and 3 of them have blonde hair. What fraction of the girls on the team have either brown or blonde hair?

$\frac{10}{12}$ (or $\frac{5}{6}$) of the girls have brown or blonde hair.

3 $\frac{1}{10}$ of the pictures on Sophie's phone are of her dog and $\frac{4}{10}$ are of her friends. What fraction of Sophie's pictures include her dog or her friends?

$\frac{5}{10}$ (or $\frac{1}{2}$) of Sophie's pictures include her dog or her friends.

4 There is $\frac{2}{4}$ cup of oil in a measuring cup. If Zoe adds another $\frac{1}{4}$ cup of oil, what will the total volume of oil be?

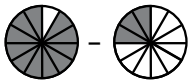
The total volume of oil will be $\frac{3}{4}$ of a cup.

5 Bailey and Emma are making brownies. They each pour $\frac{1}{3}$ cup of sugar into the bowl. How much sugar do they add in all?

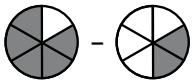
They add $\frac{2}{3}$ of a cup of sugar.

94 Add and Subtract Fractions

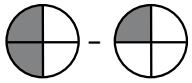
Use the model to help you subtract the fractions.

EX 

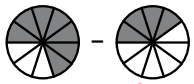
$\frac{11}{12} - \frac{3}{12} = \frac{8}{12}$

1 

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

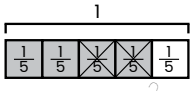
2 

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

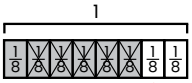
3 

$\frac{7}{10} - \frac{4}{10} = \frac{3}{10}$

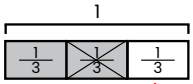
Use the bar model to help you subtract each pair of fractions.

EX 

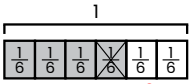
$\frac{4}{5} - \frac{2}{5} = \frac{2}{5}$

1 

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

2 

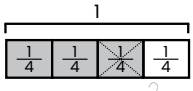
$\frac{2}{3} - \frac{1}{3} = \frac{1}{3}$

3 

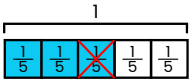
$\frac{4}{6} - \frac{1}{6} = \frac{3}{6}$ or $\frac{1}{2}$

Add and Subtract Fractions 95

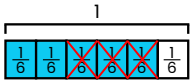
Fill in the bar model to show subtraction. Then, complete the equation.

EX 

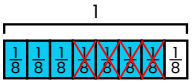
$\frac{3}{4} - \frac{1}{4} = \frac{2}{4}$

1 

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

2 

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

3 

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

Subtract each pair of fractions.

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

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

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

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

8 $\frac{10}{12} - \frac{5}{12} = \frac{5}{12}$

9 $\frac{3}{4} - \frac{1}{4} = \frac{2}{4}$ or $\frac{1}{2}$

10 Write a rule for subtracting fractions with the same denominator.

Leave the denominator the same and subtract the numerators.

96 Add and Subtract Fractions

Use subtraction to answer each word problem.

1 Kate has $\frac{7}{8}$ of a cup of water. After she drinks $\frac{5}{8}$ of it, how much water is left?

Kate has $\frac{2}{8}$ (or $\frac{1}{4}$) of a cup of water left.

2 Adrian takes a pie out of the refrigerator and sees that 6 of the original 8 slices of the pie are left. After Adrian eats 1 slice, what fraction of the whole pie will be left?

$\frac{5}{8}$ of the pie will be left.

3 Sam is sharpening all the pencils in a box of 12. So far, he has sharpened 8 of them. What fraction of the pencils are still unsharpened?

$\frac{4}{12}$ (or $\frac{1}{3}$) of the pencils are still unsharpened.

4 A carton of milk is $\frac{3}{4}$ full at the start of the morning. Then, $\frac{1}{4}$ of the carton is used for breakfast. What fraction of the carton still contains milk after breakfast?

$\frac{2}{4}$ (or $\frac{1}{2}$) of the carton still contains milk.

5 Rowan buys school lunch on 3 out of 5 days of the school week, and on the other days, he brings a lunch from home. On what fraction of school days does Rowan bring lunch from home?

Rowan brings lunch from home on $\frac{2}{5}$ of school days.

Add and Subtract Fractions 97

Add or subtract.

1 $\frac{2}{12} + \frac{7}{12} = \frac{9}{12}$ or $\frac{3}{4}$

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

3 $\frac{4}{10} + \frac{5}{10} = \frac{9}{10}$

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

5 $\frac{5}{8} + \frac{2}{8} = \frac{7}{8}$

6 $\frac{1}{10} + \frac{6}{10} = \frac{7}{10}$

7 $\frac{5}{6} - \frac{3}{6} = \frac{2}{6}$ or $\frac{1}{3}$

8 $\frac{11}{12} - \frac{6}{12} = \frac{5}{12}$

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

10 $\frac{7}{8} - \frac{3}{8} = \frac{4}{8}$ or $\frac{1}{2}$

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

12 $\frac{2}{4} - \frac{1}{4} = \frac{1}{4}$

13 $\frac{6}{12} + \frac{5}{12} = \frac{11}{12}$

14 $\frac{2}{6} + \frac{2}{6} = \frac{4}{6}$ or $\frac{2}{3}$

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

16 $\frac{9}{12} - \frac{4}{12} = \frac{5}{12}$

17 $\frac{3}{8} + \frac{3}{8} = \frac{6}{8}$ or $\frac{3}{4}$

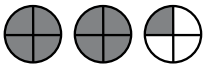
18 $\frac{6}{10} + \frac{2}{10} = \frac{8}{10}$ or $\frac{4}{5}$

19 $\frac{4}{6} - \frac{3}{6} = \frac{1}{6}$

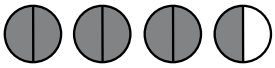
20 $\frac{4}{8} - \frac{2}{8} = \frac{2}{8}$ or $\frac{1}{4}$

98 Mixed Numbers and Improper Fractions

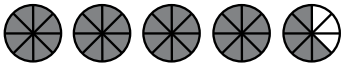
Add the wholes and the parts shown in the model to create a mixed number.

EX 

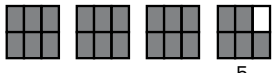
1 + 1 + $\frac{1}{4}$ = $2\frac{1}{4}$

1 

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

2 

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

3 

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

4 

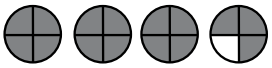
1 + 1 + $\frac{3}{8}$ = $2\frac{3}{8}$

5 

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

Mixed Numbers and Improper Fractions 99

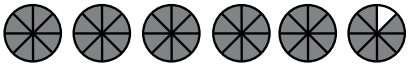
Fill in the equation by adding the wholes and the parts shown in the model to create a mixed number.

EX 

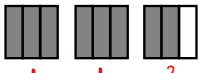
1 + 1 + 1 + $\frac{3}{4}$ = $3\frac{3}{4}$

1 

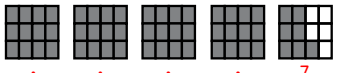
1 + $\frac{1}{2}$ = $1\frac{1}{2}$

2 

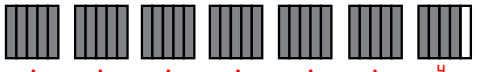
1 + 1 + 1 + 1 + 1 + $\frac{7}{8}$ = $5\frac{7}{8}$

3 

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

4 

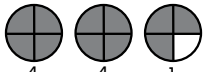
1 + 1 + 1 + 1 + $\frac{7}{12}$ = $4\frac{7}{12}$

5 

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

100 Mixed Numbers and Improper Fractions

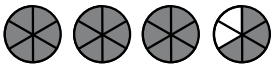
Add the parts shown in the model to create an improper fraction.

EX 

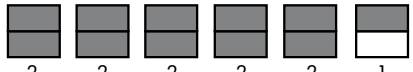
$\frac{4}{4}$ + $\frac{4}{4}$ + $\frac{1}{4}$ = $\frac{9}{4}$

1 

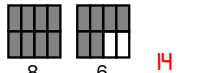
$\frac{3}{3}$ + $\frac{3}{3}$ + $\frac{3}{3}$ + $\frac{3}{3}$ + $\frac{1}{3}$ = $\frac{13}{3}$

2 

$\frac{6}{6}$ + $\frac{6}{6}$ + $\frac{6}{6}$ + $\frac{4}{6}$ = $\frac{22}{6}$

3 

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

4 

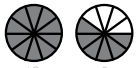
$\frac{8}{8}$ + $\frac{6}{8}$ = $\frac{14}{8}$

5 

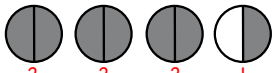
$\frac{10}{10}$ + $\frac{10}{10}$ + $\frac{10}{10}$ + $\frac{9}{10}$ = $\frac{39}{10}$

Mixed Numbers and Improper Fractions 101

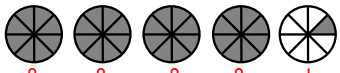
Fill in the equation by adding the parts shown in the model to create an improper fraction.

EX 

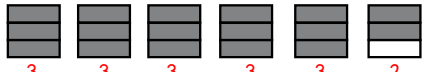
$\frac{10}{10}$ + $\frac{6}{10}$ = $\frac{16}{10}$

1 

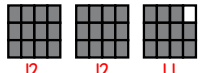
$\frac{2}{2}$ + $\frac{2}{2}$ + $\frac{2}{2}$ + $\frac{1}{2}$ = $\frac{7}{2}$

2 

$\frac{8}{8}$ + $\frac{8}{8}$ + $\frac{8}{8}$ + $\frac{8}{8}$ + $\frac{1}{8}$ = $\frac{33}{8}$

3 

$\frac{3}{3}$ + $\frac{3}{3}$ + $\frac{3}{3}$ + $\frac{3}{3}$ + $\frac{3}{3}$ + $\frac{2}{3}$ = $\frac{17}{3}$

4 

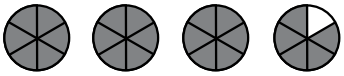
$\frac{12}{12}$ + $\frac{12}{12}$ + $\frac{11}{12}$ = $\frac{35}{12}$

5 

$\frac{5}{5}$ + $\frac{5}{5}$ + $\frac{5}{5}$ + $\frac{2}{5}$ = $\frac{17}{5}$

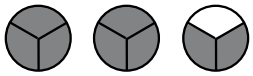
102 Mixed Numbers and Improper Fractions

Write the number shown by the model as both an improper fraction and a mixed number.



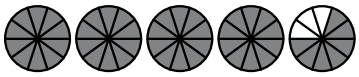
Improper Fraction	Mixed Number
$\frac{23}{6}$	$3\frac{5}{6}$

1



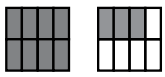
Improper Fraction	Mixed Number
$\frac{8}{3}$	$2\frac{2}{3}$

2



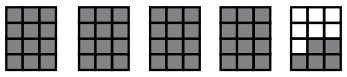
Improper Fraction	Mixed Number
$\frac{47}{10}$	$4\frac{7}{10}$

3



Improper Fraction	Mixed Number
$\frac{11}{8}$	$1\frac{3}{8}$

4



Improper Fraction	Mixed Number
$\frac{53}{12}$	$4\frac{5}{12}$

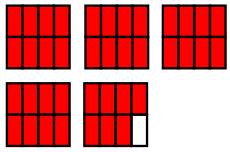
5

Improper Fraction	Mixed Number
$\frac{11}{4}$	$2\frac{3}{4}$

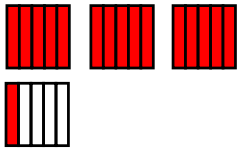
103 Mixed Numbers and Improper Fractions

Draw a model to represent each mixed number or improper fraction.

$4\frac{7}{8}$

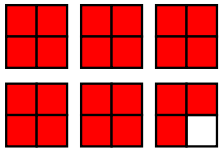


$\frac{16}{5}$

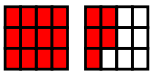


$2\frac{3}{10}$

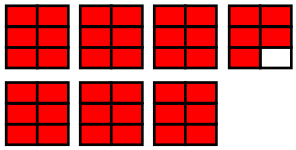
$\frac{23}{4}$



$1\frac{5}{12}$



$\frac{41}{6}$



104 Mixed Numbers and Improper Fractions

Change each mixed number into an improper fraction.

EX $4\frac{9}{10} = ?$

4 (whole number) × 10 (denominator) = 40

40 + 9 (numerator) = 49 (new numerator)

So, $4\frac{9}{10} = \frac{49}{10}$

1 $5\frac{3}{5} = ?$

5 (whole number) × 5 (denominator) = 25

25 + 3 (numerator) = 28 (new numerator)

So, $5\frac{3}{5} = \frac{28}{5}$

2 $2\frac{7}{12} = ?$

2 (whole number) × 12 (denominator) = 24

24 + 7 (numerator) = 31 (new numerator)

So, $2\frac{7}{12} = \frac{31}{12}$

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

6 (whole number) × 4 (denominator) = 24

24 + 3 (numerator) = 27 (new numerator)

So, $6\frac{3}{4} = \frac{27}{4}$

4 $7\frac{2}{3} = ?$

7 (whole number) × 3 (denominator) = 21

21 + 2 (numerator) = 23 (new numerator)

So, $7\frac{2}{3} = \frac{23}{3}$

5 $3\frac{1}{8} = ?$

3 (whole number) × 8 (denominator) = 24

24 + 1 (numerator) = 25 (new numerator)

So, $3\frac{1}{8} = \frac{25}{8}$

105 Mixed Numbers and Improper Fractions

Change each mixed number into an improper fraction.

EX $7\frac{1}{4} = \frac{29}{4}$

1 $6\frac{5}{6} = \frac{41}{6}$

2 $2\frac{7}{10} = \frac{27}{10}$

3 $1\frac{5}{12} = \frac{17}{12}$

4 $9\frac{2}{3} = \frac{29}{3}$

5 $3\frac{3}{8} = \frac{27}{8}$

6 $4\frac{1}{6} = \frac{25}{6}$

7 $10\frac{3}{4} = \frac{43}{4}$

8 $5\frac{1}{3} = \frac{16}{3}$

9 $8\frac{2}{5} = \frac{42}{5}$

10 $11\frac{1}{2} = \frac{23}{2}$

11 $7\frac{1}{5} = \frac{36}{5}$

Fill in the correct bubble to answer each question.

12 Which improper fraction is equivalent to $3\frac{7}{8}$?

○ $\frac{21}{8}$ ○ $\frac{29}{8}$ ● $\frac{31}{8}$ ○ $\frac{39}{8}$

13 Which improper fraction is equivalent to $8\frac{3}{10}$?

○ $\frac{24}{10}$ ○ $\frac{54}{10}$ ○ $\frac{68}{10}$ ● $\frac{83}{10}$

14 Which improper fraction is equivalent to $6\frac{4}{5}$?

○ $\frac{26}{5}$ ○ $\frac{29}{5}$ ● $\frac{34}{5}$ ○ $\frac{39}{5}$

106 Mixed Numbers and Improper Fractions

Change each improper fraction into a mixed number.

EX $\frac{27}{4} = ?$

27 (numerator) ÷ 4 (denominator) = 6 (whole number) R 3 (new numerator)

So, $\frac{27}{4} = 6\frac{3}{4}$

1 $\frac{32}{3} = ?$

32 (numerator) ÷ 3 (denominator) = 10 (whole number) R 2 (new numerator)

So, $\frac{32}{3} = 10\frac{2}{3}$

2 $\frac{17}{8} = ?$

17 (numerator) ÷ 8 (denominator) = 2 (whole number) R 1 (new numerator)

So, $\frac{17}{8} = 2\frac{1}{8}$

3 $\frac{11}{2} = ?$

11 (numerator) ÷ 2 (denominator) = 5 (whole number) R 1 (new numerator)

So, $\frac{11}{2} = 5\frac{1}{2}$

4 $\frac{49}{5} = ?$

49 (numerator) ÷ 5 (denominator) = 9 (whole number) R 4 (new numerator)

So, $\frac{49}{5} = 9\frac{4}{5}$

5 $\frac{87}{10} = ?$

87 (numerator) ÷ 10 (denominator) = 8 (whole number) R 7 (new numerator)

So, $\frac{87}{10} = 8\frac{7}{10}$

6 $\frac{53}{6} = ?$

53 (numerator) ÷ 6 (denominator) = 8 (whole number) R 5 (new numerator)

So, $\frac{53}{6} = 8\frac{5}{6}$

7 $\frac{29}{12} = ?$

29 (numerator) ÷ 12 (denominator) = 2 (whole number) R 5 (new numerator)

So, $\frac{29}{12} = 2\frac{5}{12}$

Mixed Numbers and Improper Fractions 107

Change each improper fraction into a mixed number.

EX $\frac{37}{4} = 9\frac{1}{4}$

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

2 $\frac{35}{8} = 4\frac{3}{8}$

3 $\frac{26}{3} = 8\frac{2}{3}$

4 $\frac{47}{10} = 4\frac{7}{10}$

5 $\frac{29}{5} = 5\frac{4}{5}$

6 $\frac{43}{6} = 7\frac{1}{6}$

7 $\frac{17}{12} = 1\frac{5}{12}$

8 $\frac{13}{4} = 3\frac{1}{4}$

9 $\frac{19}{2} = 9\frac{1}{2}$

10 $\frac{24}{5} = 4\frac{4}{5}$

11 $\frac{93}{10} = 9\frac{3}{10}$

Fill in the correct bubble to answer each question.

12 Which mixed number is equivalent to $\frac{37}{8}$?

- ○ $3\frac{7}{8}$
- ○ $3\frac{5}{8}$
- ○ $4\frac{1}{8}$
- ● $4\frac{5}{8}$

13 Which mixed number is equivalent to $\frac{71}{10}$?

- ● $7\frac{1}{10}$
- ○ $7\frac{7}{10}$
- ○ $8\frac{1}{10}$
- ○ $8\frac{3}{10}$

14 Which mixed number is equivalent to $\frac{34}{5}$?

- ○ $5\frac{4}{5}$
- ● $6\frac{4}{5}$
- ○ $7\frac{4}{5}$
- ○ $8\frac{4}{5}$

108 Mixed Numbers and Improper Fractions

Find the sum of the mixed numbers.

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

1. Add the whole numbers.
   3 + 4 = 7
2. Add the fractions.
   $\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$
3. Create a mixed number.
   $7\frac{3}{5}$

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

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

3 $2\frac{7}{12} + 5\frac{4}{12} = 7\frac{11}{12}$

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

5 $9\frac{4}{10} + 2\frac{3}{10} = 11\frac{7}{10}$

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

7 $6\frac{2}{5} + 3\frac{2}{5} = 9\frac{4}{5}$

Mixed Numbers and Improper Fractions 109

Find the sum of the mixed numbers with regrouping.

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

1. Add the whole numbers.
   6 + 1 = 7
2. Add the fractions.
   $\frac{4}{5} + \frac{2}{5} = \frac{6}{5}$
3. Change the improper fraction to a mixed number.
   $\frac{6}{5} = 1\frac{1}{5}$
4. Add this to the whole number.
   $7 + 1\frac{1}{5} = 8\frac{1}{5}$

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

2 $5\frac{5}{8} + 4\frac{6}{8} = 10\frac{3}{8}$

3 $1\frac{3}{4} + 7\frac{2}{4} = 9\frac{1}{4}$

4 $9\frac{7}{10} + 2\frac{6}{10} = 12\frac{3}{10}$

5 $4\frac{11}{12} + 9\frac{6}{12} = 14\frac{5}{12}$

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

110 Mixed Numbers and Improper Fractions

Subtract the mixed numbers.

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

1. Subtract the whole numbers.
   $7 - 3 = 4$
2. Subtract the fractions.
   $\frac{4}{5} - \frac{3}{5} = \frac{1}{5}$
3. Create a mixed number.
   $4\frac{1}{5}$

1. $4\frac{7}{8} - 1\frac{2}{8} = \underline{3\frac{5}{8}}$
2. $6\frac{5}{6} - 4\frac{4}{6} = \underline{2\frac{1}{6}}$
3. $9\frac{11}{12} - 5\frac{4}{12} = \underline{4\frac{7}{12}}$
4. $8\frac{2}{3} - 7\frac{1}{3} = \underline{1\frac{1}{3}}$
5. $11\frac{9}{10} - 3\frac{2}{10} = \underline{8\frac{7}{10}}$
6. $4\frac{3}{4} - 1\frac{2}{4} = \underline{3\frac{1}{4}}$
7. $8\frac{4}{5} - 6\frac{2}{5} = \underline{2\frac{2}{5}}$

Mixed Numbers and Improper Fractions 111

Find the difference between the mixed numbers using regrouping.

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

1. Since the numerator of the first fraction is smaller than the numerator of the second fraction, regroup by borrowing from the whole number.
   $8\frac{2}{5} = 7 + \frac{5}{5} + \frac{2}{5} = 7\frac{7}{5}$
2. Subtract the whole numbers from the two mixed numbers.
   $7 - 6 = 1$
3. Subtract the fractions.
   $\frac{7}{5} - \frac{3}{5} = \frac{4}{5}$
4. Create a mixed number.
   $1\frac{4}{5}$

1. $4\frac{1}{3} - 1\frac{2}{3} = \underline{2\frac{2}{3}}$
2. $7\frac{1}{8} - 4\frac{6}{8} = \underline{2\frac{3}{8}}$
3. $9\frac{1}{4} - 6\frac{2}{4} = \underline{2\frac{3}{4}}$
4. $6\frac{4}{10} - 3\frac{7}{10} = \underline{2\frac{7}{10}}$
5. $8\frac{2}{12} - 2\frac{9}{12} = \underline{5\frac{5}{12}}$
6. $5\frac{1}{5} - 2\frac{4}{5} = \underline{2\frac{2}{5}}$

112 Mixed Numbers and Improper Fractions

Add or subtract the improper fractions. Then, convert the answer to a mixed number.

EX $\frac{25}{4} - \frac{6}{4} = \underline{\frac{19}{4}} = \underline{4\frac{3}{4}}$

1. $\frac{84}{6} - \frac{47}{6} = \underline{\frac{37}{6}} = \underline{6\frac{1}{6}}$
2. $\frac{7}{2} + \frac{12}{2} = \underline{\frac{19}{2}} = \underline{9\frac{1}{2}}$
3. $\frac{11}{8} + \frac{10}{8} = \underline{\frac{21}{8}} = \underline{2\frac{5}{8}}$
4. $\frac{31}{3} - \frac{8}{3} = \underline{\frac{23}{3}} = \underline{7\frac{2}{3}}$
5. $\frac{27}{5} - \frac{11}{5} = \underline{\frac{16}{5}} = \underline{3\frac{1}{5}}$
6. $\frac{43}{10} + \frac{24}{10} = \underline{\frac{67}{10}} = \underline{6\frac{7}{10}}$
7. $\frac{9}{4} + \frac{14}{4} = \underline{\frac{23}{4}} = \underline{5\frac{3}{4}}$
8. $\frac{47}{12} - \frac{34}{12} = \underline{\frac{13}{12}} = \underline{1\frac{1}{12}}$
9. $\frac{76}{2} - \frac{67}{2} = \underline{\frac{9}{2}} = \underline{4\frac{1}{2}}$
10. $\frac{11}{6} + \frac{14}{6} = \underline{\frac{25}{6}} = \underline{4\frac{1}{6}}$
11. $\frac{16}{12} + \frac{15}{12} = \underline{\frac{31}{12}} = \underline{2\frac{7}{12}}$

Mixed Numbers and Improper Fractions 113

Solve each word problem involving mixed numbers.

1. On Monday, Gretchen ran $3\frac{3}{8}$ miles. On Tuesday, she ran $2\frac{7}{8}$ miles. How far did she run in total on Monday and Tuesday?

   $3\frac{3}{8} + 2\frac{7}{8} = 6\frac{2}{8}$ miles (or $6\frac{1}{4}$ miles)

2. Dan has $1\frac{1}{3}$ cups of milk in a measuring cup. He pours out $\frac{2}{3}$ of a cup. How much milk is left in the measuring cup?

   $1\frac{1}{3} - \frac{2}{3} = \frac{2}{3}$ of a cup of milk

3. Last year, Matt was $49\frac{3}{4}$ inches tall. He has grown $2\frac{3}{4}$ inches since then. How tall is Matt now?

   $49\frac{3}{4} + 2\frac{3}{4} = 52\frac{2}{4}$ inches (or $52\frac{1}{2}$ inches)

4. Allie has $25\frac{3}{10}$ cm of ribbon. She needs $18\frac{9}{10}$ cm for a project. How much will she have left over after cutting the correct length?

   $25\frac{3}{10} - 18\frac{9}{10} = 6\frac{4}{10}$ cm (or $6\frac{2}{5}$ inches)

5. Ann gives her cat $\frac{1}{4}$ cup of dry cat food each morning and $\frac{1}{4}$ cup each evening. The cat food comes in a bag containing $16\frac{3}{4}$ cups. If Ann opens a new bag to feed her cat in the morning, how much food will be left in the bag at the end of the day?

   $16\frac{3}{4} - \frac{2}{4} = 16\frac{1}{4}$ cups

114 Multiplying Fractions

Complete the multiplication expression shown by each model.

EX 

3 × 1/4

1 

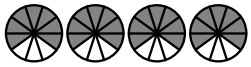
4 × 2/3

2 

3 × 5/8

3 

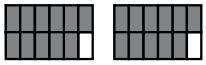
5 × 5/6

4 

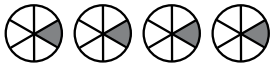
4 × 7/10

5 

9 × 1/2

6 

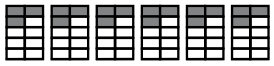
2 × 11/12

7 

4 × 1/6

8 

3 × 7/8

9 

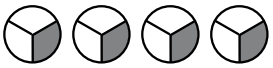
6 × 3/10

Multiplying Fractions 115

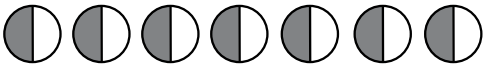
Use the models to help you multiply each fraction by a whole number. Express your answer as an improper fraction.

EX 

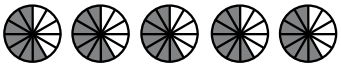
5 × 5/6 = 25/6

1 

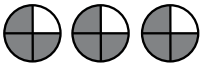
4 × 1/3 = 4/3

2 

7 × 1/2 = 7/2

3 

5 × 7/12 = 35/12

4 

3 × 3/4 = 9/4

116 Multiplying Fractions

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

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

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

2 $3 \times \frac{7}{8} = \frac{21}{8} = 2\frac{5}{8}$

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

4 $11 \times \frac{1}{6} = \frac{11}{6} = 1\frac{5}{6}$

5 $7 \times \frac{9}{10} = \frac{63}{10} = 6\frac{3}{10}$

6 $2 \times \frac{5}{12} = \frac{10}{12}$ (or $\frac{5}{6}$)

7 $9 \times \frac{1}{4} = \frac{9}{4} = 2\frac{1}{4}$

8 $10 \times \frac{2}{3} = \frac{20}{3} = 6\frac{2}{3}$

9 $5 \times \frac{3}{8} = \frac{15}{8} = 1\frac{7}{8}$

10 $7 \times \frac{5}{6} = \frac{35}{6} = 5\frac{5}{6}$

11 $5 \times \frac{11}{12} = \frac{55}{12} = 4\frac{7}{12}$

12 $3 \times \frac{7}{10} = \frac{21}{10} = 2\frac{1}{10}$

13 $6 \times \frac{3}{5} = \frac{18}{5} = 3\frac{3}{5}$

14 $4 \times \frac{3}{4} = \frac{12}{4} = 3$

15 $8 \times \frac{2}{3} = \frac{16}{3} = 5\frac{1}{3}$

Multiplying Fractions 117

Solve each word problem using multiplication.

1 Vincent is making burgers for 8 people. Each burger uses $\frac{1}{4}$ pound of ground beef. How many pounds of ground beef will Vincent need in all?

$8 \times \frac{1}{4} = \frac{8}{4} = 2$ pounds of ground beef

2 A recipe calls for $\frac{2}{3}$ of a cup of flour. How much flour would be needed to double the recipe?

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

3 Leann practiced flute for 4 hours this week. Jamie practiced $\frac{2}{3}$ as long as Leann. For how many hours did Jamie practice?

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

4 Grace is 5 feet tall. Matthew is $\frac{7}{10}$ as tall as Grace. How many feet tall is Matthew?

$5 \times \frac{7}{10} = \frac{35}{10} = 3\frac{5}{10}$ or $3\frac{1}{2}$ feet tall

5 An average apple weighs $\frac{1}{3}$ of a pound. Jenny picks 20 apples. What is the approximate total weight of the apples in pounds?

$20 \times \frac{1}{3} = \frac{20}{3} = 6\frac{2}{3}$ pounds

118 Decimals

Rewrite each fraction as a decimal.

EX $\frac{3}{10}$ = 0.3 ① $\frac{7}{10}$ = 0.7 ② $\frac{1}{10}$ = 0.1

③ $\frac{5}{10}$ = 0.5 ④ $\frac{4}{10}$ = 0.4 ⑤ $\frac{9}{10}$ = 0.9

Rewrite each decimal as a fraction.

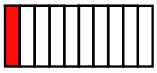
EX 0.6 = $\frac{6}{10}$ ⑥ 0.8 = $\frac{8}{10}$ ⑦ 0.9 = $\frac{9}{10}$

⑧ 0.2 = $\frac{2}{10}$ ⑨ 0.3 = $\frac{3}{10}$ ⑩ 0.7 = $\frac{7}{10}$

Color in the model to show each decimal.

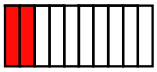
EX 0.6

⑪ 0.1



⑫ 0.4

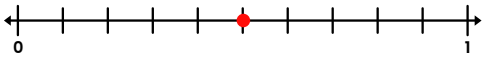
⑬ 0.2



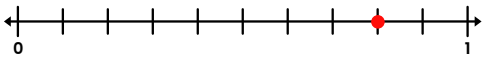
119 Decimals

Graph each decimal on a number line.

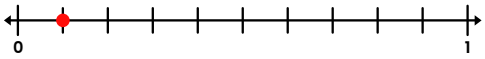
① 0.5



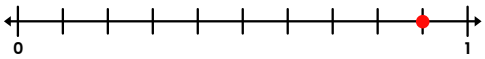
② 0.8



③ 0.1

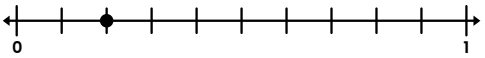


④ 0.9

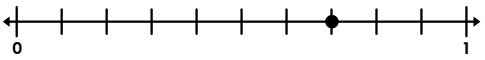


Write the decimal represented by the marked point on each number line.

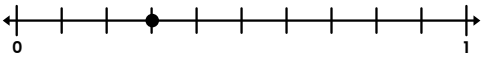
⑤ 0.2



⑥ 0.7



⑦ 0.3



120 Decimals

Rewrite each fraction as a decimal.

EX $\frac{37}{100}$ = 0.37 ① $\frac{81}{100}$ = 0.81 ② $\frac{43}{100}$ = 0.43

③ $\frac{59}{100}$ = 0.59 ④ $\frac{28}{100}$ = 0.28 ⑤ $\frac{76}{100}$ = 0.76

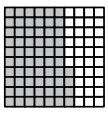
Rewrite each decimal as a fraction.

EX 0.23 = $\frac{23}{100}$ ⑥ 0.11 = $\frac{11}{100}$ ⑦ 0.67 = $\frac{67}{100}$

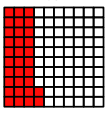
⑧ 0.09 = $\frac{9}{100}$ ⑨ 0.33 = $\frac{33}{100}$ ⑩ 0.71 = $\frac{71}{100}$

Color in the model to show each decimal.

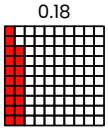
EX 0.64



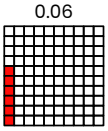
⑪ 0.32



⑫ 0.18



⑬ 0.06



121 Decimals

Rewrite each mixed number as a decimal.

EX $8\frac{76}{100}$ = 8.76 ① $2\frac{13}{100}$ = 2.13 ② $9\frac{87}{100}$ = 9.87

③ $1\frac{32}{100}$ = 1.32 ④ $4\frac{61}{100}$ = 4.61 ⑤ $7\frac{58}{100}$ = 7.58

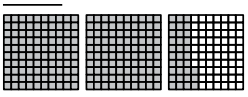
Rewrite each decimal as a mixed number.

EX 3.19 = $3\frac{19}{100}$ ⑥ 5.27 = $5\frac{27}{100}$ ⑦ 6.41 = $6\frac{41}{100}$

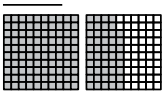
⑧ 8.93 = $8\frac{93}{100}$ ⑨ 2.81 = $2\frac{81}{100}$ ⑩ 1.57 = $1\frac{57}{100}$

Write the decimal represented by each model.

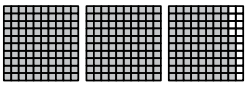
EX 2.33



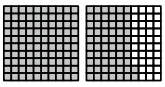
⑪ 1.48



⑫ 2.86

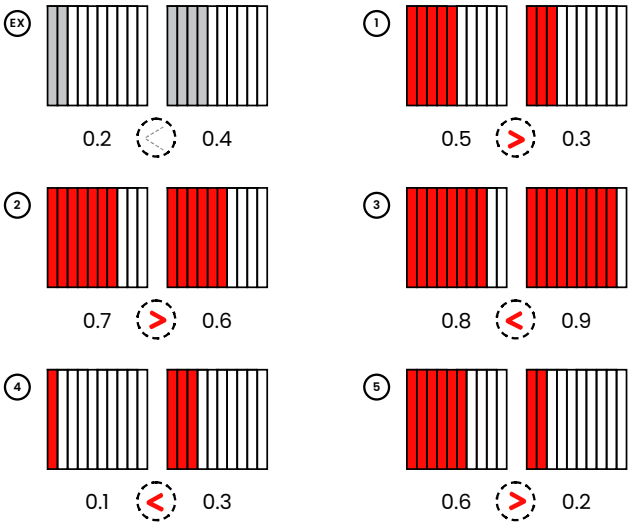


⑬ 1.62



122 Decimals

Color in the models to show each decimal. Then, compare each pair of decimals using > or <.



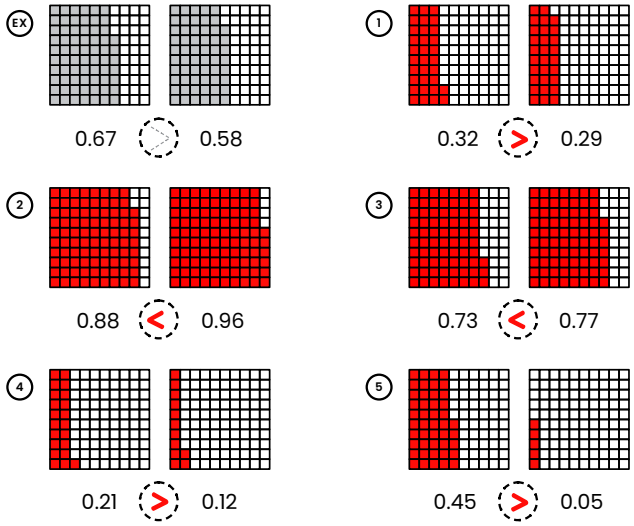
Compare each pair of decimals using > or <.

EX 0.1 < 0.4 6 0.6 > 0.5 7 0.7 < 0.9

8 0.8 > 0.3 9 0.5 > 0.1 10 0.2 < 0.6

123 Decimals

Color in the models to show each decimal. Then, compare each pair of decimals using > or <.



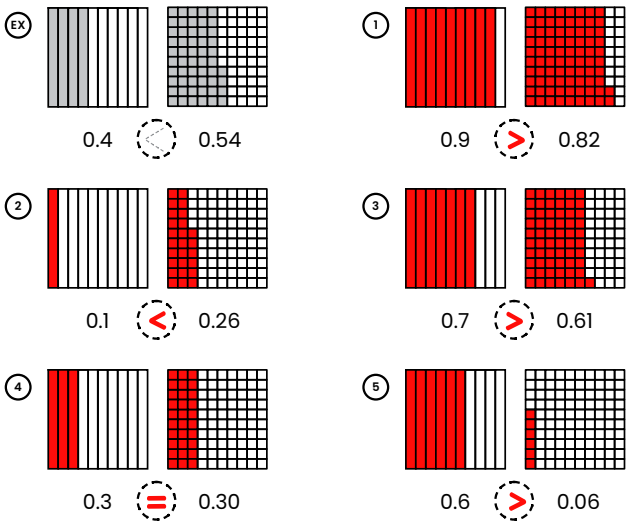
Compare each pair of decimals using > or <.

EX 0.84 < 0.89 6 0.47 > 0.38 7 0.27 > 0.19

8 0.68 > 0.53 9 0.55 < 0.71 10 0.42 < 0.85

124 Decimals

Color in the models to show each decimal. Then, compare each pair of decimals using >,<, or =.



Compare each pair of decimals using >, <, or =.

EX 0.8 < 0.85 6 0.41 > 0.3 7 0.7 < 0.71

8 0.19 < 0.2 9 0.5 > 0.46 10 0.31 > 0.2

125 Decimals

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

EX 0.8 | 0.78 | 0.83 | 0.9 — 0.78 , 0.8 , 0.83 , 0.9

1 0.17 | 0.15 | 0.1 | 0.08 — 0.08 , 0.1 , 0.15 , 0.17

2 0.62 | 0.5 | 0.58 | 0.6 — 0.5 , 0.58 , 0.6 , 0.62

3 0.3 | 0.37 | 0.41 | 0.4 — 0.3 , 0.37 , 0.4 , 0.41

4 0.65 | 0.45 | 0.05 | 0.5 — 0.05 , 0.45 , 0.5 , 0.65

5 0.72 | 0.8 | 0.67 | 0.6 — 0.6 , 0.67 , 0.72 , 0.8

Compare each pair of numbers using >, <, or =.

EX 2.7 < 3.12 6 1.89 < 1.9 7 7.1 > 7

8 5 = 5.0 9 3.62 < 4.27 10 8.01 > 6.99

11 9.2 > 9.0 12 0.78 < 1.13 13 5.73 > 4.73

126 Decimals

Find each sum.

EX 1.3 + 2.5 = 3.8	1 3.2 + 1.4 = 4.6	2 5.1 + 3.6 = 8.7	3 2.7 + 2.6 = 5.3	4 9.3 + 0.2 = 9.5
5 7.5 + 1.6 = 9.1	6 0.9 + 3.8 = 4.7	7 6.3 + 2.3 = 8.6	8 4.4 + 5.8 = 10.2	9 6.3 + 2.5 = 8.8

10 1.4 + 2.3 = 3.7 11 5.2 + 0.7 = 5.9 12 3.6 + 2.1 = 5.7

Find each difference.

EX 2.4 - 0.5 = 1.9	13 4.2 - 1.1 = 3.1	14 6.3 - 3.0 = 3.3	15 7.8 - 5.6 = 2.2	16 9.1 - 5.7 = 3.4
17 7.4 - 3.6 = 3.8	18 8.9 - 4.9 = 4.0	19 6.4 - 2.3 = 4.1	20 4.5 - 0.8 = 3.7	21 5.3 - 2.1 = 3.2

22 8.5 - 2.4 = 6.1 23 5.9 - 0.8 = 5.1 24 7.6 - 5.4 = 2.2

Decimals 127

Find each sum.

EX 4.27 + 1.65 = 5.92	1 3.46 + 5.03 = 8.49	2 2.78 + 6.23 = 9.01	3 7.04 + 1.93 = 8.97
4 0.56 + 8.49 = 9.05	5 4.54 + 4.72 = 9.26	6 3.97 + 6.01 = 9.98	7 8.21 + 1.56 = 9.77

8 2.01 + 7.86 = 9.87 9 4.37 + 3.52 = 7.89

Find each difference.

EX 9.43 - 6.24 = 3.19	10 8.92 - 5.04 = 3.88	11 6.81 - 4.91 = 1.90	12 7.07 - 3.83 = 3.24
13 5.69 - 2.62 = 3.07	14 3.58 - 1.47 = 2.11	15 9.47 - 0.65 = 8.82	16 2.36 - 1.22 = 1.14

17 8.92 - 7.41 = 1.51 18 5.83 - 3.02 = 2.81

128 Decimals

Find each sum or difference.

EX 1.97 + 5.3 = 5.92	1 2.18 + 6.4 = 8.58	2 3.2 + 7.59 = 10.79	3 4.02 + 8.6 = 12.62
4 9.39 - 5.7 = 3.69	5 6.41 - 0.8 = 5.61	6 7.5 - 4.03 = 3.47	7 8.6 - 5.67 = 2.93
8 8.6 + 0.29 = 8.89	9 9.74 + 1.7 = 11.44	10 0.8 + 2.08 = 2.88	11 1.95 + 3.9 = 5.85
12 2.06 - 1.4 = 0.66	13 3.17 - 0.5 = 2.67	14 4.2 - 1.06 = 3.14	15 5.8 - 2.49 = 3.31

Rewrite each equation vertically, lining up the decimals points. Then, add or subtract.

EX 4.6 + 3.75 = 8.35

4.6
+ 3.75
8.35

16 7.34 - 6.2 = 1.14

7.34
- 6.2
1.14

17 5.97 + 2.6 = 8.57

5.97
+ 2.6
8.57

18 8.5 - 4.31 = 4.19

8.5
- 4.31
4.19

Decimals 129

Solve each word problem involving decimals.

1 A marathon is a race that is 26.2 miles long. A half marathon is 13.1 miles long. If Kerry has competed in both a marathon and a half marathon, what is the total distance run in both races?

26.2 + 13.1 = 39.3 miles

2 Tim drove 3.6 miles to a coffee shop, then another 1.75 miles to work. How far did he drive in all?

3.6 + 1.75 = 5.35 miles

3 Chris is 1.76 meters tall. Shannon is 1.63 meters tall. How much taller is Chris than Shannon?

1.76 - 1.63 = 0.13 meters

4 Before Molly starts baking, there are 4.75 pounds of flour in the bag. When she is finished, there are 2.8 pounds left. How much flour did Molly use?

4.75 - 2.8 = 1.95 pounds

5 Carter wants to buy a book that costs $8.99 and a pen that costs $1.50. What will be his total cost?

$8.99 + $1.50 = $10.49

132 Customary Measurement

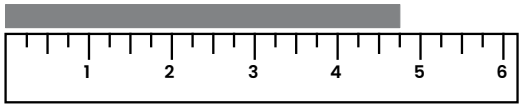
Complete each table to convert between U.S. customary units of length.

Feet (ft)	1	2	4	5	6	10
Inches (in)	12	24	48	60	72	120

Yards (yd)	1	3	5	7	11	25
Feet (ft)	3	9	15	21	33	75

Yards (yd)	1	2	3	5	8	10
Inches (in)	36	72	108	180	288	360

Answer the following questions using the inch ruler shown below.



1. What is the length of the gray rectangle? $4\frac{3}{4}$ inches

2. What would be the total length of 2 of these rectangles?
$9\frac{1}{2}$ inches

133 Customary Measurement

Answer each word problem involving metric units of length.

1. Steve's living room is 12 feet long. What is the length in yards?
4 yards 12 ÷ 3 = 4

2. Aria ran in a 50-yard dash. How many feet long was the race?
150 feet 50 × 3 = 150

3. Kyle is 4 feet, 3 inches tall. What is his height in inches?
51 inches 4 feet = 4 × 12 = 48 inches
48 + 3 = 51

4. John has 2 yards of rope. He cuts off 7 inches. How many inches of rope are left?
65 inches 2 yards = 2 × 36 = 72 inches
72 - 7 = 65

5. Greg has a wooden board that is 2 yards long and another that is 4 feet long. What is the total length of the boards?
10 feet 2 yards = 2 × 3 = 6 feet
6 + 4 = 10

134 Customary Measurement

Complete each table to convert between U.S. customary units of weight.

Pounds (lbs)	1	2	3	5	6	10
Ounces (oz)	16	32	48	80	96	160

Tons (T)	1	2	3	5	6	10
Pounds (lbs)	2,000	4,000	6,000	10,000	12,000	20,000

Fill in the correct bubble to answer each question.

1. Which of these is more likely to be the weight of a car?
● 2 tons ○ 20 pounds ○ 200 ounces

2. An elephant that weighs 4 tons weighs how much in pounds?
○ 4,000 lbs ● 8,000 lbs ○ 16,000 lbs

2. When Kelsey was a newborn, she weighed 8 pounds, 2 ounces. What was her weight in ounces?
○ 82 oz ○ 108 oz ● 130 oz

135 Customary Measurement

Use the chart to answer each question about U.S. customary units of volume.

1 gallon = 4 quarts = 8 pints = 16 cups = 128 fluid ounces
1 quart = 2 pints = 4 cups = 32 fluid ounces
1 pint = 2 cups = 16 fluid ounces
1 cup = 8 fluid ounces

1. Wendy has a full quart of cream. She uses 1 cup for a recipe. How many cups are left?
3 cups 1 quart = 4 cups
4 - 1 = 3 cups

2. A thermos hold 30 fl. oz. of liquid. What is the maximum number of full cups it can hold?
3 cups 30 ÷ 8 = 3 R 6

3. How many total pints are in 1 gallon and 3 quarts?
14 pints 1 gallon = 8 pints 3 quarts = 6 pints
8 + 6 = 14 pints

4. How many fluids ounces are in a half-gallon carton of milk?
64 fl. oz. 1 gallon = 128 fl. oz.
128 ÷ 2 = 64

136 Metric Measurement

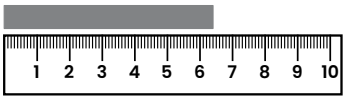
Complete each table to convert between metric units of length.

Centimeters (cm)	1	3	4	5.2	6.3	9
Millimeters (mm)	10	30	40	52	63	90

Meters (m)	1	2	5	6.1	7.8	10
Centimeters (cm)	100	200	500	61	780	100

Kilometers (km)	1	3	4	5.9	6.5	8
Meters (m)	1,000	3,000	4,000	5,900	6,500	8,000

Answer the following questions using the centimeter ruler shown below.



1. How many millimeters are marked on the ruler in all? 100
2. What is the length of the gray rectangle in centimeters? 6.4
3. What is the length of the gray rectangle in millimeters? 64

137 Metric Measurement

Answer each word problem involving metric units of length.

1. Anna is 1.5 meters tall. What is her height in centimeters?

   150 cm 1.5 × 100 = 150

2. Patrick ran a 5-kilometer race. How many meters did he run?

   5,000 m 5 × 1,000 = 5,000

3. Leah's pencil is exactly 14 cm long. What is its length in mm?

   140 mm 14 × 10 = 140

4. Becky has a pair of pants that are 85 cm long. She plans to hem them to make them 2.3 cm shorter. What will the new length of the pants be?

   82.7 cm 85 - 2.3 = 82.7

5. Tom is planning to fence in a rectangular garden that measures 2.8 meters by 3.1 meters. What will the total length of the fence be?

   11.8 m 2.8 + 2.8 + 3.1 + 3.1 = 11.8

138 Metric Measurement

Complete the table to convert between metric units of weight.

Kilograms (kg)	1	2	4	7.5	8.9	12
Grams (g)	1,000	2,000	4,000	7,500	8,900	12,000

Answer the following questions using metric units of weight.

1. Joey weighs 41 kilograms. What is his weight in grams?

   41,000 g 41 × 1,000 = 41,000

2. Andre buys a 1-kg bag of apples. After he eats one apple, the bag weighs 850 grams. How much did the apple Andre ate weigh in grams?

   150 g 1 kg = 1,000 g

   1,000 - 850 = 150 grams

3. Which weight is greater– 18 kg or 1,800 g? How do you know?

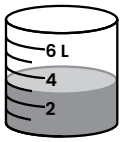
   18 kg is greater because 1 kg is equal to 1,000 g. So, 18 kg equals 18,000 g, which is greater than 1,800 g.

139 Metric Measurement

Complete the table to convert between metric units of volume.

Liters (L)	1	3	5	6.1	7.5	20
Milliliters (mL)	1,000	3,000	5,000	6,100	7,500	20,000

Answer the following questions based on the picture below.



1. What is the volume of the liquid in the container in liters? In milliliters?

   3 L or 3,000 mL

2. If 260 mL of liquid were poured out, what would be the volume of liquid left in the container?

   2,740 mL 3,000 - 260 = 2,740

3. Which could hold more liquid– the container shown here or one that holds 800 mL? How do you know?

   The container shown could hold more liquid. It can at least 6 L, which is equal to 6,000 mL, which is greater than 800 mL.

140 Time

Fill in the table to show equivalent units of time.

60 seconds = 1 minute	365 days = 1 non-leap year
60 minutes = 1 hour	366 days = 1 leap year
24 hours = 1 day	12 months = 1 year
7 days = 1 week	10 years = 1 decade
52 weeks = 1 year	100 years = 1 century

Convert between units of time. Assume that years are not leap years.

1. 5 hours = 300 minutes
2. 3 years = 1,095 days
3. 14 minutes = 840 seconds
4. 48 months = 4 years
5. 2 hours = 7,200 seconds
6. 56 days = 8 weeks
7. 6 days = 144 hours
8. 2 weeks = 336 hours
9. 1 day = 1,440 minutes
10. 7 years = 364 weeks
11. 1,200 years = 12 centuries
12. 4 decades = 40 years

Time 141

Use division to convert to mixed units of time.

EX. 187 minutes = 3 hours and 7 minutes
187 ÷ 60 = 3 R 7

1. 256 minutes = 4 hours and 16 minutes
256 ÷ 60 = 4 R 16
2. 617 minutes = 10 hours and 17 minutes
617 ÷ 60 = 10 R 17
3. 375 seconds = 6 minutes and 15 seconds
375 ÷ 60 = 6 R 15
4. 192 seconds = 3 minutes and 12 seconds
192 ÷ 60 = 3 R 12
5. 63 hours = 2 days and 15 hours
63 ÷ 24 = 2 R 15
6. 89 hours = 3 days and 17 hours
89 ÷ 24 = 3 R 17
7. 41 days = 5 weeks and 6 days
41 ÷ 7 = 5 R 6
8. 92 days = 13 weeks and 1 days
92 ÷ 7 = 13 R 1

142 Time

Fill in the missing start time, elapsed time, or end time in each row of the chart below. The first row is filled out for you as an example. You can use the space at the bottom of the page to make any calculations needed.

Start Time	Elapsed Time	End Time
11:48 AM	3 hours, 36 minutes	3:24 PM
2:37 PM	2 hours, 10 minutes	4:47 PM
1:18 AM	5 hours, 27 minutes	6:45 AM
10:09 PM	4 hours, 53 minutes	3:02 AM
5:28 AM	12 hours, 44 minutes	6:12 PM
4:11 PM	10 hours, 7 minutes	2:18 AM
7:51 AM	6 hours, 35 minutes	2:26 PM

Time 143

The table below shows the schedule for a train line that runs between the same stops multiple times per day. Use the schedule to answer the questions that follow.

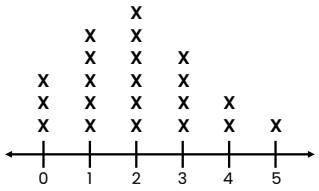
Station	Train 102	Train 104	Train 106	Train 108
Westmoreland	9:00 AM	9:45 AM	10:30 AM	11:15 AM
Fairmount	9:15 AM	10:00 AM	10:45 AM	11:30 AM
Cherry Heights	9:35 AM	10:20 AM	11:05 AM	11:50 AM
Riverside	9:50 AM	10:35 AM	11:20 AM	12:05 PM

1. Miguel boards the Train 104 at Fairmount. What time will he arrive in Riverside?
10:35 AM
2. How long does it take Train 108 to travel the entire length of the route?
50 minutes
3. Rachel gets on Train 102 at Westmoreland. How long will it take her to get to Cherry Heights?
35 minutes
4. Jason arrives at the Cherry Heights station at 9:45. How long will he have to wait before he can board a train to Riverside?
35 minutes
5. Train 110 travels this same route and departs Westmoreland station at noon. At what time would you expect it to arrive at Fairmount?
12:15 PM

144 Representing Data

Use the line plot to answer the questions that follow.

Mrs. Wilkins surveyed the students in her class about how many pets they have. The results are shown in the line plot below.



1. **If every student in the class participated in the survey, how many total students are in the class?**

   21 students

2. **How many students in the class do not have a pet?**

   3 students

3. **How many students in the class have more than 3 pets?**

   3 students

4. **Alyssa is one of the students in the class who has 2 pets. How many students have twice as many pets as Alyssa?**

   2 students

5. **If Alyssa were to get one more pet, how would the line plot change?**

   There would be 5 students with 2 pets and 5 students with 3 pets.

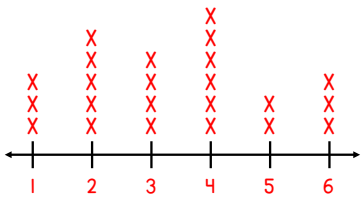
Representing Data 145

Make a line plot to show the data given. Then, answer the questions below.

Kylie rolled a six-sided die repeatedly and recorded how many times she rolled each number on the tally chart shown below.

Number Rolled	Number of Times
1	|||
2	||||
3	||||
4	|||| |
5	||
6	|||

Create a line plot to show this data.



1. **Which number did Kylie roll most often?**

   4

2. **How many times did Kylie roll a number that was not a 4?**

   17

3. **How many times did Kylie roll an even number?**

   14

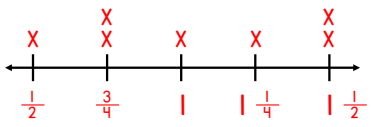
146 Representing Data

Make a line plot from the data shown. Then, answer the questions below.

The table below shows the lengths of the various hiking trails, in miles, at a park.

Trail Name	Length
Lakeview	$\frac{1}{2}$
Pine Hollow	$\frac{3}{4}$
Deer Run	$1\frac{1}{2}$
Longbranch	1
North Rim	$1\frac{1}{2}$
South Rim	$\frac{3}{4}$
East Ridge	$1\frac{1}{4}$

Create a line plot to show this data.



1. **Which is the shortest trail?**

   Lakeview

2. **How many trails are longer than 1 mile?**

   3 trails

3. **What is the difference between the longest and shortest trails?**

   1 mile

Representing Data 147

Use the bar graph to answer the questions that follow.

Many national parks offer a choice of a single-visit entrance fee or an annual fee that covers unlimited visits throughout the year. The graph below shows the single-visit and annual entrance fees for four national parks.

1. **How much more is an annual pass to the Badlands than to Muir Woods?**

   $55 - $45 = $10

2. **How many single visits to Denali would equal the cost of an annual pass?**

   $45 ÷ $15 = 3 visits

3. **How much would it cost to visit Great Falls twice without an annual pass?**

   $10 × 2 = $20

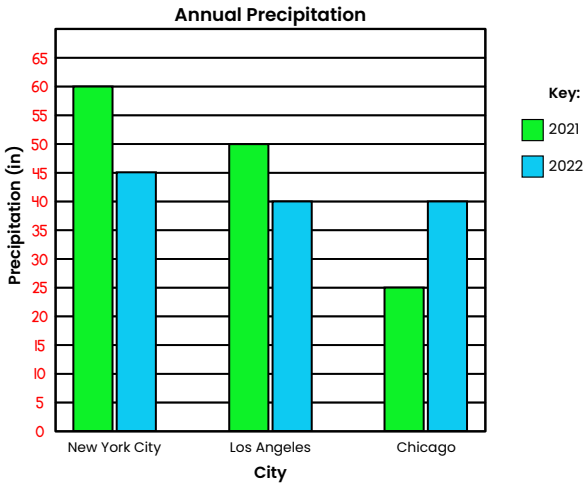
148 Representing Data

Make a bar graph to show the data given.

The table below lists the total inches of precipitation in 2021 and 2022 in three major U.S. cities.

	New York City	Houston	Chicago
2021	60 in.	50 in.	25 in.
2022	45 in.	40 in.	40 in.

Choose an appropriate scale and record the data on the bar graph below. Use two different colors to represent 2021 and 2022.



Representing Data 149

Use the line graph to answer the questions that follow.

The graph below shows the monthly sales at a certain company.

1. **What were the companies sales in April?**

   $40,000

2. **In how many months did the company make more than $35,000 in sales?**

   8 months

3. **How much more did the company make in sales in December than in March?**

   $40,000 - $35,000 = $5,000

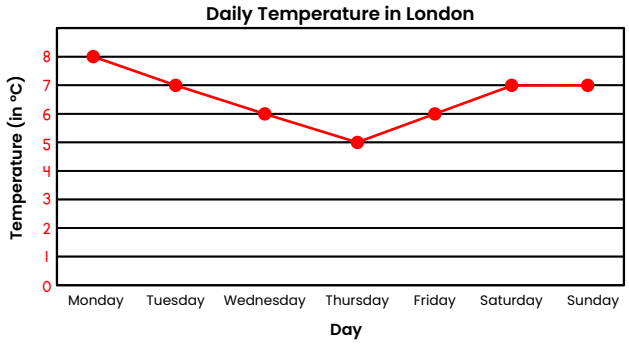
150 Representing Data

Use the information below to create a line graph and a frequency table to show the data.

The table below lists the average daily temperature in London during a given week.

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
8°C	7°C	6°C	5°C	6°C	7°C	7°C

Choose an appropriate scale and record the data on the line graph below.



Use the data to complete the frequency table shown at right.

Temperature	Frequency
5°C	1
6°C	2
7°C	3
8°C	1

Representing Data 151

Use the stem and leaf plot to answer the questions that follow.

At a holiday party with her extended family, Riley recorded the heights (in inches) of her family members. The results are shown in the stem and leaf plot below.

Stem	Leaf
4	6 8 8 9
5	3 5 6 8
6	0 3 4 7 7 8 9
7	2 5

1. **What was the height of the tallest person at the party?**

   75 inches

2. **How many people at the party were 67 inches tall?**

   2 people

3. **How many people at the party were at least 63 inches tall?**

   8 people

4. **How many people at the party were 4 feet tall or less?**

   3 people

5. **What was the height difference between the tallest and shortest people at the party?**

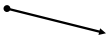
   75 - 46 = 29 inches

154 Lines and Angles

Write the correct word from the word bank to describe each image.

WORD BANK

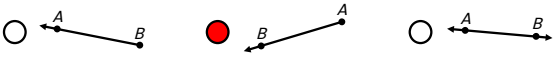
line | line segment | point | angle | ray

1.  angle
2.  line
3. point
4.  ray
5. line segment

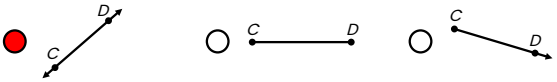
155 Lines and Angles

Fill in the correct bubble to answer each question.

Which figure shows $\overrightarrow{AB}$?

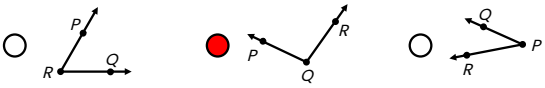


Which figure shows $\overline{CD}$?

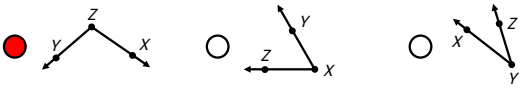


Which figure shows $\overline{EF}$?

Which figure shows $\angle PQR$?



Which figure shows $\angle YZX$?

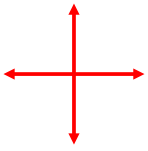


156 Lines and Angles

Circle whether each pair of lines appears to be parallel, perpendicular, or intersecting.

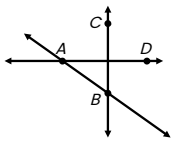
	Parallel Perpendicular **Intersecting**		Parallel **Perpendicular** Intersecting
	**Parallel** Perpendicular Intersecting		Parallel Perpendicular **Intersecting**
	Parallel **Perpendicular** Intersecting		**Parallel** Perpendicular Intersecting

Draw an example of each type of lines.

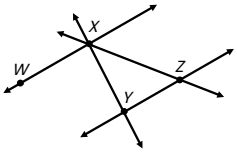
Intersecting	Parallel	Perpendicular
		

157 Lines and Angles

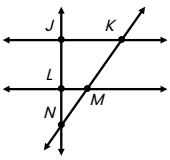
Select the statement that appears to be true based on each diagram.



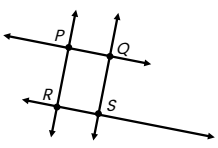
- **$\overrightarrow{AD}$ is perpendicular to $\overrightarrow{CB}$.**
- $\overrightarrow{AB}$ is perpendicular to $\overrightarrow{AD}$.
- $\overrightarrow{AB}$ is perpendicular to $\overrightarrow{CB}$.



- $\overrightarrow{XY}$ is parallel to $\overrightarrow{XZ}$.
- **$\overrightarrow{WX}$ is parallel to $\overrightarrow{YZ}$.**
- $\overrightarrow{YZ}$ is parallel to $\overrightarrow{XZ}$.



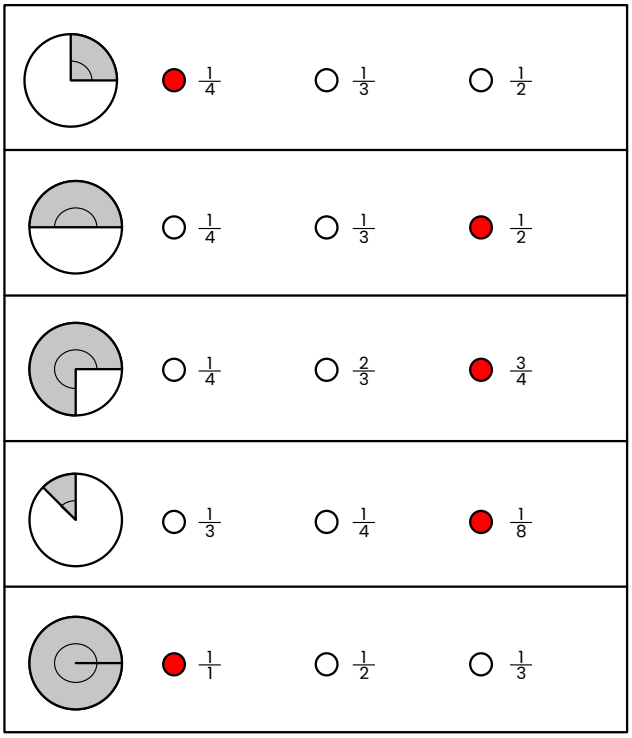
- $\overrightarrow{KM}$ is perpendicular to $\overrightarrow{JK}$.
- $\overrightarrow{LM}$ is perpendicular to $\overrightarrow{NK}$.
- **$\overrightarrow{JN}$ is perpendicular to $\overrightarrow{LM}$.**



- $\overrightarrow{PQ}$ is parallel to $\overrightarrow{RP}$.
- **$\overrightarrow{PR}$ is parallel to $\overrightarrow{QS}$.**
- $\overrightarrow{QS}$ is parallel to $\overrightarrow{PQ}$.

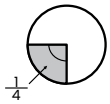
158 Lines and Angles

Fill in the bubble of the fraction of the circle represented by each angle.



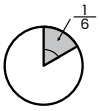
Lines and Angles 159

Use each fraction of a circle to find the angle's measurement in degrees.

EX 

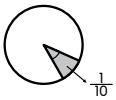
$\frac{1}{4} = \frac{90}{360}$

So, the angle measures 90°.

1 

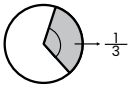
$\frac{1}{6} = \frac{60}{360}$

So, the angle measures 60°.

2 

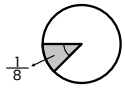
$\frac{1}{10} = \frac{36}{360}$

So, the angle measures 36°.

3 

$\frac{1}{3} = \frac{120}{360}$

So, the angle measures 120°.

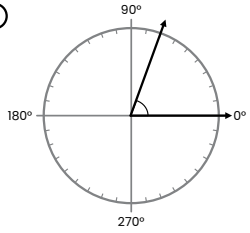
4 

$\frac{1}{8} = \frac{45}{360}$

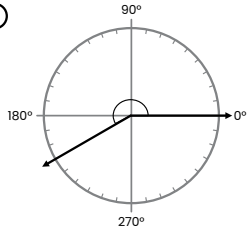
So, the angle measures 45°.

160 Lines and Angles

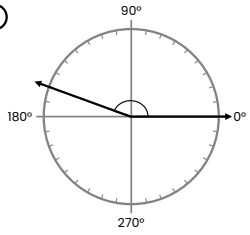
Find the measure of the angle shown on each circle.

1 

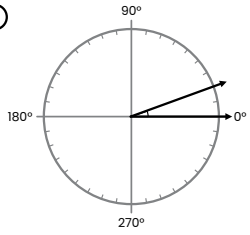
The angle measures 70°.

2 

The angle measures 200°.

3 

The angle measures 160°.

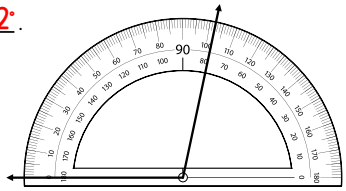
4 

The angle measures 20°.

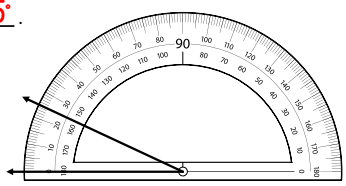
Lines and Angles 161

Use the protractor shown to find the measure of each angle.

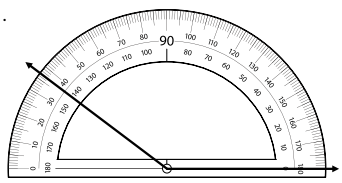
1 The angle measures 102°.



2 The angle measures 25°.

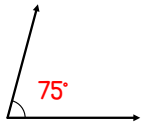


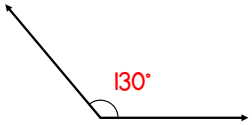
3 The angle measures 143°.

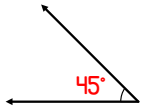


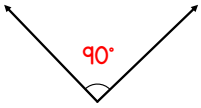
162 Lines and Angles

Use a protractor to find the degree measure of each angle.

1. 

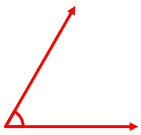
2. 

3. 

4. 

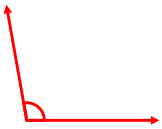
Use a protractor to sketch an angle with each degree measure.

5. 60°



6. 15°

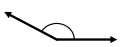
7. 100°



8. 145°

163 Lines and Angles

Circle whether each angle is acute, right, obtuse, or straight.

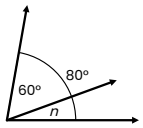
 Acute Obtuse **Right** Straight	 Acute **Obtuse** Right Straight
 **Acute** Obtuse Right Straight	 Acute Obtuse Right **Straight**
 Acute **Obtuse** Right Straight	**Acute** Obtuse Right Straight

Next to each angle measure, write whether the angle is acute, right, obtuse, or straight.

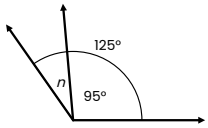
1. 27° acute
2. 90° right
3. 162° obtuse
4. 86° acute
5. 180° straight
6. 55° acute
7. 119° obtuse
8. 98° obtuse

164 Lines and Angles

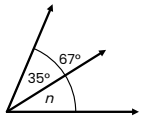
Find the measure of the angle marked *n* in each diagram.

EX 

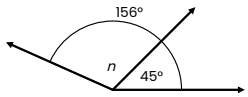
n = 20°

1. 

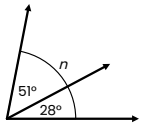
n = 30°

2. 

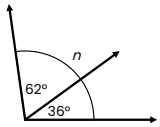
n = 32°

3. 

n = 111°

4. 

n = 79°

5. 

n = 98°

165 Lines and Angles

Solve each word problem involving angles.

1. Two angles join to form a 118° angle. The first angle measures 56°. What is the measure of the second angle?

   118° − 56° = 62°

2. Two angles measuring 22° and 43° join to form a larger angle. What is the measure of the combined angle?

   22° + 43° = 65°

3. Two angles join to form a straight angle. The first angle measures 95°. What is the measure of the second angle?

   180° − 95° = 85°

4. Two angles join to form an obtuse angle. The first angle measures 72°. What is the smallest possible measure of the second angle?

   91° − 72° = 19°

5. Two identical angles join to form a right angle. What is the measure of one of these angles?

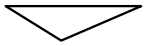
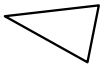
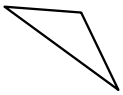
   90° ÷ 2 = 45°

166 Classifying Shapes

Fill in the blanks with the correct numbers to make each sentence true.

1. A right triangle has one 90 ° angle and 2 acute angles.
2. An acute triangle has 3 angles that measure less than 90°.
3. An obtuse triangle has 1 angle(s) greater than 90° and 2 angle(s) smaller than 90°.

Circle whether each triangle is acute, right, or obtuse.

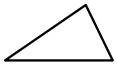
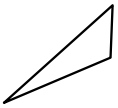
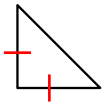
 Acute (circled) Right Obtuse	 Acute Right Obtuse (circled)
 Acute Right (circled) Obtuse	 Acute (circled) Right Obtuse
 Acute Right Obtuse (circled)	 Acute Right (circled) Obtuse

167 Classifying Shapes

Fill in the blanks with the correct numbers to make each sentence true.

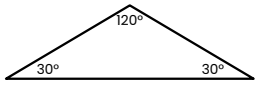
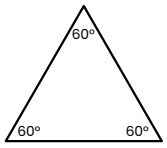
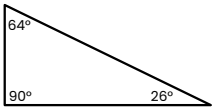
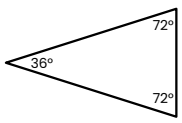
1. An isosceles triangle has 2 equal sides.
2. An equilateral triangle has 3 equal sides.
3. A scalene triangle has 0 equal sides.

Mark the sides of each triangle that appear equal (if any). Then, circle whether the triangle is scalene, isosceles, or equilateral.

 Scalene Isosceles (circled) Equilateral	 Scalene (circled) Isosceles Equilateral
 Scalene (circled) Isosceles Equilateral	 Scalene Isosceles Equilateral (circled)
 Scalene Isosceles Equilateral (circled)	 Scalene Isosceles (circled) Equilateral

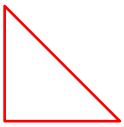
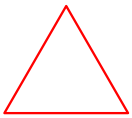
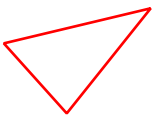
168 Classifying Shapes

Circle ALL the words that describe each triangle.

	Acute Right Obtuse (circled)	Scalene Isosceles (circled) Equilateral
	Acute (circled) Right Obtuse	Scalene Isosceles Equilateral (circled)
	Acute Right (circled) Obtuse	Scalene (circled) Isosceles Equilateral
	Acute (circled) Right Obtuse	Scalene Isosceles (circled) Equilateral

169 Classifying Shapes

Draw a triangle that matches each description. *answers may vary*

Right isosceles 	Acute equilateral 
Obtuse isosceles 	Right scalene 
Acute scalene 	Obtuse scalene 

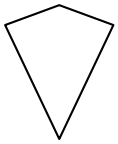
170 Classifying Shapes

For each quadrilateral, write how many pairs of parallel sides and how many of each type of angle the shape contains.

1 pairs of parallel sides
1 acute angles
2 right angles
1 obtuse angles

2 pairs of parallel sides
0 acute angles
4 right angles
0 obtuse angles

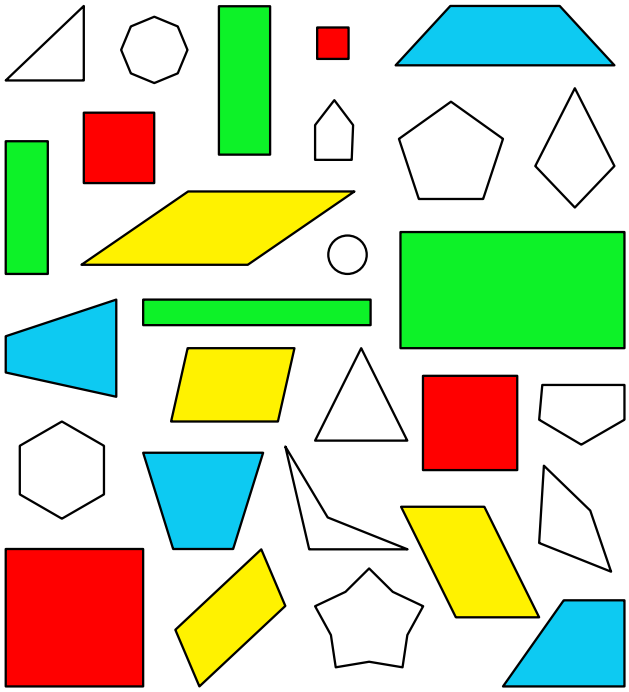
2 pairs of parallel sides
2 acute angles
0 right angles
2 obtuse angles



0 pairs of parallel sides
3 acute angles
0 right angles
3 obtuse angles

171 Classifying Shapes

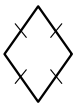
Color each square **RED**, each trapezoid **BLUE**, each rectangle **GREEN**, and each (non-rectangular) parallelogram **YELLOW.** Not all shapes will be colored.



172 Classifying Shapes

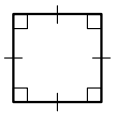
Circle ALL the words that correctly describe each shape. Sides that appear parallel are parallel.

(quadrilateral) rhombus
(parallelogram) square
(rectangle) trapezoid

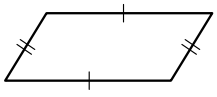


(quadrilateral) (rhombus)
(parallelogram) square
rectangle trapezoid

quadrilateral (rhombus)
parallelogram square
(rectangle) trapezoid



(quadrilateral) (rhombus)
(parallelogram) (square)
(rectangle) trapezoid



(quadrilateral) rhombus
(parallelogram) square
rectangle trapezoid

173 Classifying Shapes

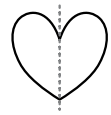
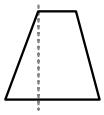
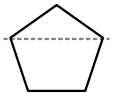
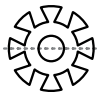
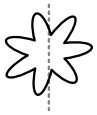
Use the grid to help you draw each shape.

answers may vary

1. **Rectangle**
2. **Trapezoid**
3. **Right triangle**
4. **Parallelogram**
5. **Isosceles triangle**
6. **Square**

174 Symmetry and Patterns

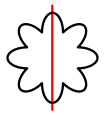
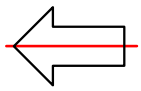
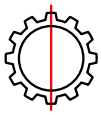
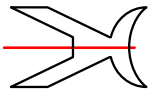
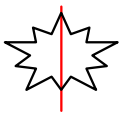
Write **YES** or **NO** to indicate whether each dashed line is a line of symmetry.

1.  YES
2.  NO
3.  YES
4.  NO
5.  YES
6.  YES
7.  NO
8.  NO
9.  YES
10.  NO
11.  NO
12.  YES

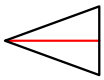
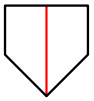
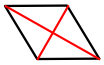
175 Symmetry and Patterns

Draw a line of symmetry on each figure.

answers for #1 and #3 may vary

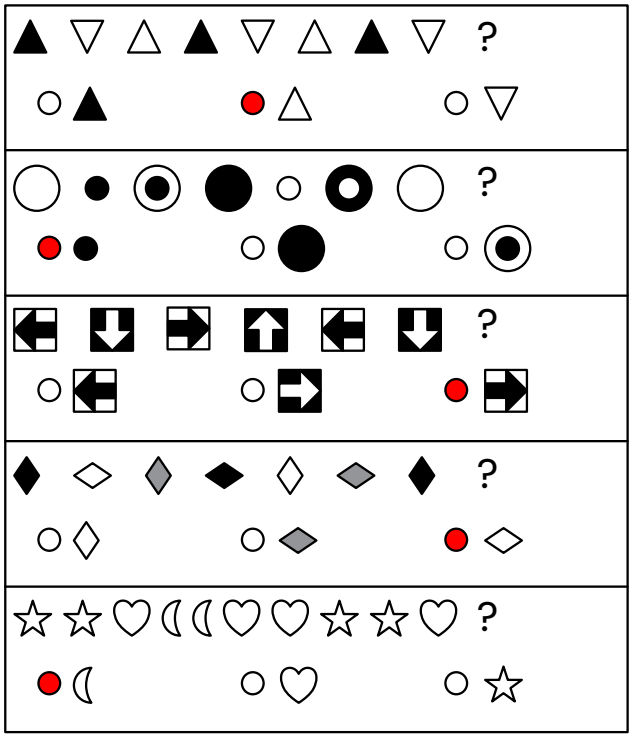
1. 
2. 
3. 
4. 
5. 
6. 

Write the number of lines of symmetry each figure has.

7.  4
8.  1
9.  6
10.  1
11.  2
12.  1

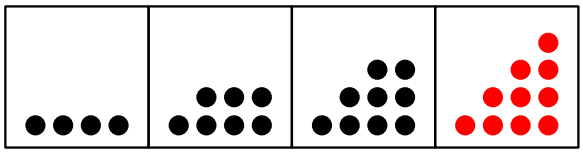
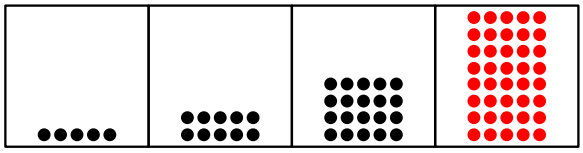
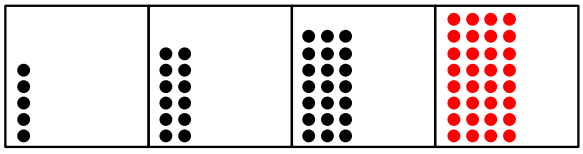
176 Symmetry and Patterns

Select the shape that would come next in each pattern.



177 Symmetry and Patterns

Draw the picture that would come next in each growing pattern .

1. 
2. 
3. 
4.