

UNITS

1-4

Simply Good and Beautiful



PRE-ALGEBRA

EXTRA PRACTICE
WORKSHEETS

MATH

8

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Note to Parents

This book contains an Extra Practice Worksheet for each lesson with new content in the *Pre-Algebra Course Books*. Logic lessons, reviews, assessments, and enrichments do not have Extra Practice Worksheets. Extra Practice Worksheets are designed to be used for lessons in which a student struggled or to review certain concepts before or after an assessment. Parents may choose which Extra Practice Worksheets a student completes and when.

Place Value and Estimation

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★ EXTRA PRACTICE

Identify the place value of the colored digit in each number below.

1. 86,203.4

2. 183.1492

3. 293,467.8501

Order each group of numbers from least to greatest.

4. 460, 421, 441, 430, 440

5. 2.24, 2.12, 2.5, 2.111, 2.2

6. 0.008, 0.015, 0.01, 0.018, 0.013

Estimate the answer by following the rounding directions for each problem. Round each number before performing the operation.

7. Round to the nearest whole number.

$985.8 + 247.23$

10. Round to the nearest tenth.

$0.89987 - 0.19133$

8. Round to the nearest ten.

$434.68 \cdot 10.33$

11. Round to the nearest hundredth.

$0.50161 \div 0.0166$

9. Round to the nearest hundred.

$179 \div 74$

12. Round to the nearest thousand.

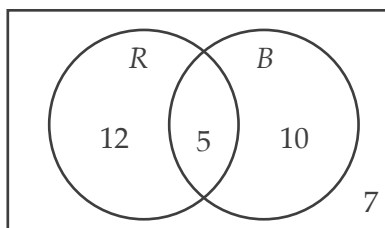
$829,733 + 245,996$

Number Sets

• • • • •

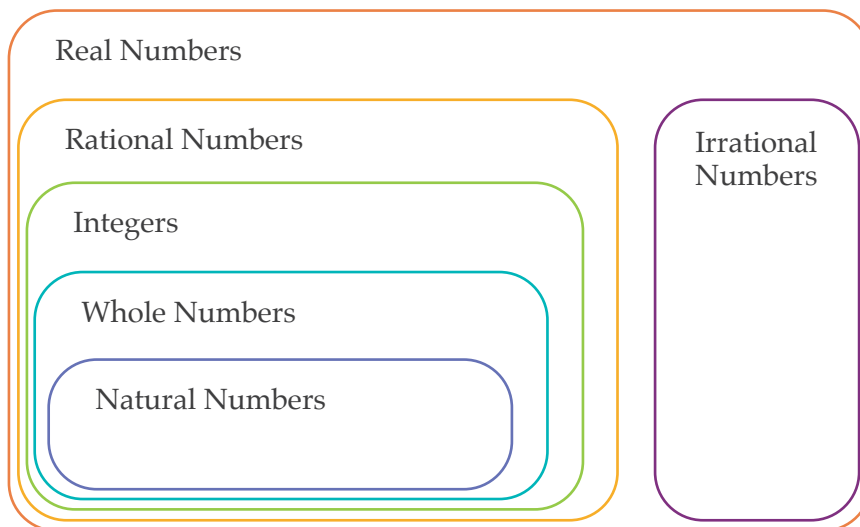
★ EXTRA PRACTICE

1. Nolan sorted his cars by color. The Venn diagram below shows his findings. Set R shows the number of cars that have red paint, and set B shows the number of cars that have blue paint.



- How many cars have red paint? _____
 - How many cars have neither red nor blue paint? _____
 - How many cars does Nolan have? _____
 - Find the number of cars in $R \cup B$. _____
 - Find the number of cars in B' . _____
 - Find the number of cars in $R \cap B$. _____
 - How many cars have only blue paint? _____
2. Classify the following numbers by writing each in the correct spot on the diagram.

$13, -2.45, \sqrt{6}, \sqrt{16}, \pi, 9\bar{2}, \frac{1}{4}, -7, 0$





★ EXTRA PRACTICE

1. A box of birthday candles has b candles. The Koman family used two boxes plus three more candles for a birthday party. The Graham family used three boxes of candles and had three left over.
- a. Write an expression that represents how many boxes of candles the Komans used.
- _____
- b. Write an expression that represents how many boxes of candles the Grahams used.
- _____
- c. Suppose both families used the same number of candles. Write and solve an equation to find how many candles are in a box.
- _____
2. A spool of lace contains x yards. Kate and Lexi are making dresses. Kate used two spools and two extra yards of lace. Lexi used three spools and has one yard of lace left over.
- a. Write an expression that represents how many yards of lace Kate used.
- _____
- b. Write an expression that represents how many yards of lace Lexi used.
- _____
- c. If both girls used the same amount of lace, write and solve an equation to find how many yards of lace are on one spool.
- _____
3. Lucy and Colton bowled one game. Lucy had eight strikes and knocked down an additional 12 pins. Colton had seven strikes and knocked down an additional 22 pins. Use p to represent the number of pins knocked down in one strike.
- a. Write an expression that represents how many pins Lucy knocked down during her game.
- _____
- b. Write an expression that represents how many pins Colton knocked down during his game.
- _____
- c. Suppose Lucy and Colton each knocked down the same number of pins. Write and solve an equation to find how many pins are knocked down in one strike.
- _____

Solving for a Specific Variable

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★ EXTRA PRACTICE



A calculator may be used for this entire worksheet.

1. Use the given formula to answer the following questions. $T = mn + p$

a. Solve for p in the formula.

b. Solve for m in the formula.

2. Use the given formula to answer the following questions. $Q = 2g - y$

a. Solve for y in the formula.

b. Solve for g in the formula.

3. The area of a trapezoid is given by the formula

$A = \frac{1}{2}(b_1 + b_2)h$, where b_1 and b_2 are the lengths of the bases and h is the height of the trapezoid.

a. Solve for h in the area formula.

- b. If the area of the trapezoid is 90 in^2 and the bases are 5 in and 10 in, use the formula from Part A to find the height of the trapezoid.

4. The volume of a rectangular prism is given by the formula $V = lwh$, where l is the length, w is the width, and h is the height of the prism.

a. Solve for w in the volume formula.

- b. If the volume of the prism is 192 m^3 , the length is 6 m, and the height is 4 m, use the formula from Part A to find the width of the prism.

The Coordinate Plane

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EXTRA PRACTICE

1. Write the letter of the graph that matches the equation on the line by the equation.

a. $y = -2$

b. $x = -3$

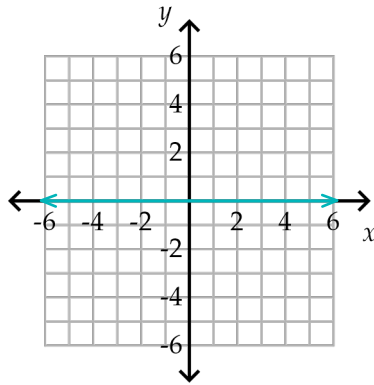
c. $x = 5$

d. $x = 0$

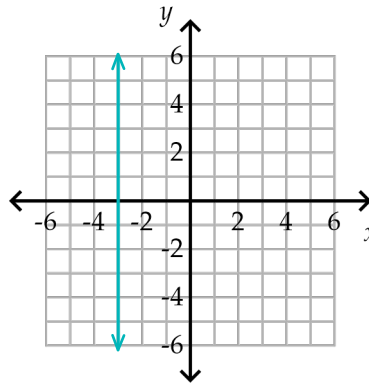
e. $y = 0$

f. $y = 5$

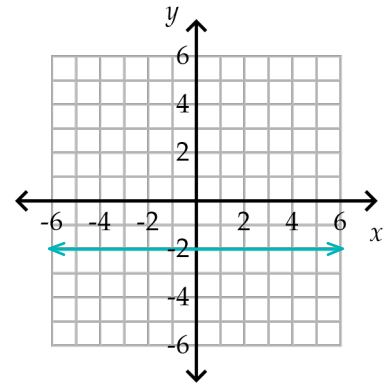
Graph G



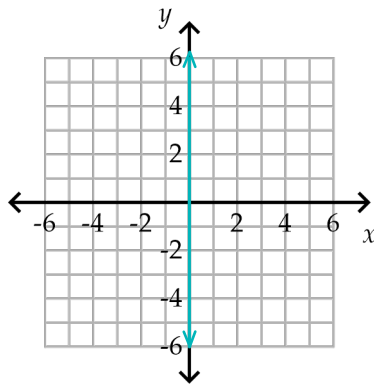
Graph H



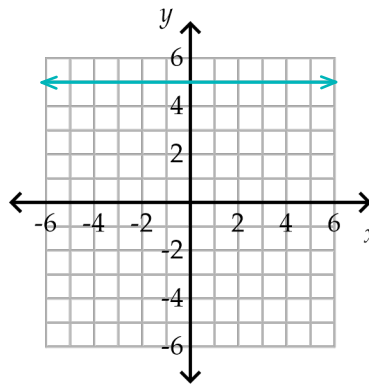
Graph I



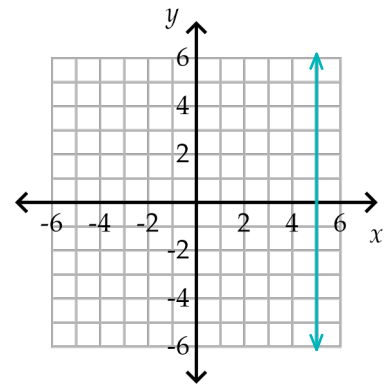
Graph J



Graph K

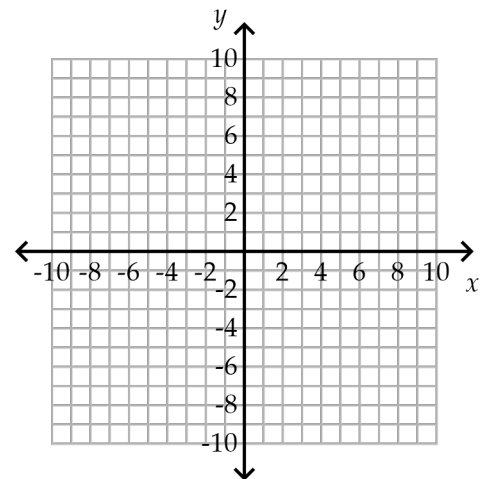


Graph L



2. Plot and label the points on the coordinate plane.

- Point A $(-9, 0)$
- Point P $(4, 10)$
- Point O $(0, 0)$
- Point S $(-3, -7)$
- Point T $(5, 1)$
- Point L $(0, 5)$
- Point E $(-5, 8)$



Using the Pythagorean Theorem



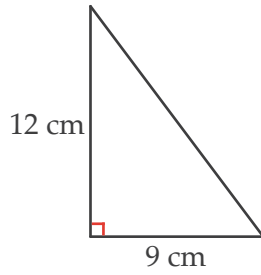
EXTRA PRACTICE



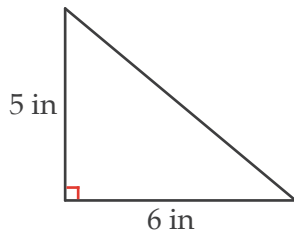
A calculator may be used for this entire worksheet.

Find the missing side length on each triangle. Round to the nearest hundredth if needed.

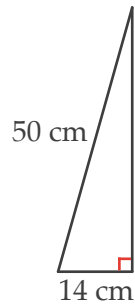
1.



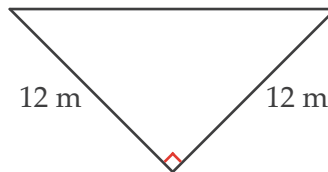
2.



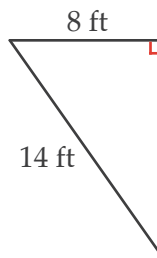
3.



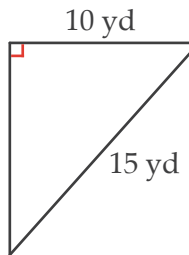
4.



5.



6.



Parts and Wholes with Fractions

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★ EXTRA PRACTICE

1. Find $\frac{2}{3}$ of 78.

4. $\frac{3}{2}$ of what number is 21?

7. What fraction of 18 is 12?

2. $\frac{1}{4}$ of what number is 17?

5. What fraction of 6 is 21?

8. $\frac{2}{5}$ of what number is 16?

3. What fraction of 45 is 15?

6. Find $\frac{5}{4}$ of 100.

9. Find $\frac{3}{7}$ of 42.

Fractions, Decimals, and Percents

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★ EXTRA PRACTICE

Complete the table to convert each given number to the other two forms.

	Fraction	Decimal	Percent
1.			75%
2.		0.35	
3.	$\frac{5}{8}$		
4.	$\frac{11}{20}$		
5.		2.48	
6.			130%
7.	$3\frac{1}{25}$		
8.			850%
9.		0.22	

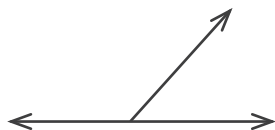
Angle Relationships and Transversals

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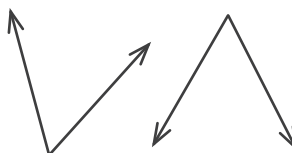
EXTRA PRACTICE

1. Determine if the figure shows adjacent angles. Write “yes” or “no” on the line.

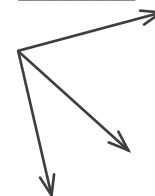
a. _____



b. _____



c. _____



2. For each angle measure, find the measure of a complementary and supplementary angle.

a. 12°

Complementary: _____

Supplementary: _____

b. 76°

Complementary: _____

Supplementary: _____

3. Using the word bank, identify the angle relationship for each figure.

Word Bank:

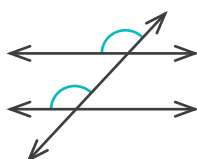
vertical angles

alternate interior angles

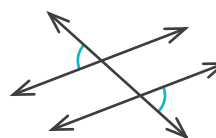
corresponding angles

alternate exterior angles

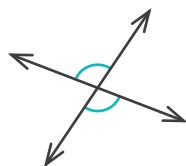
a. _____



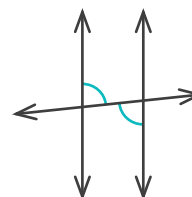
c. _____



b. _____



d. _____



4. Write “always,” “sometimes,” or “never” on each line.

a. Corresponding angles have the same measure. _____

b. Adjacent angles have the same measure. _____

c. Vertical angles have the same measure. _____

d. Complementary angles have the same measure. _____

e. Complementary angles can also be supplementary angles. _____

Congruence and Similarity in Figures

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EXTRA PRACTICE

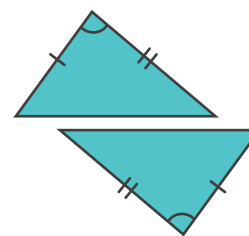
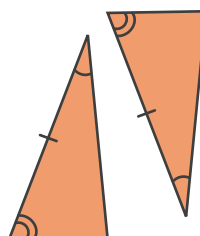
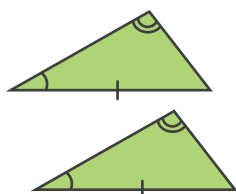
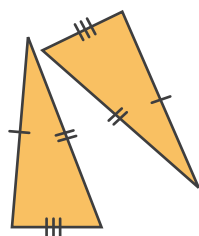
1. Draw lines to match the pair of congruent triangles to the test that can be used to show their congruence.

side-angle-side

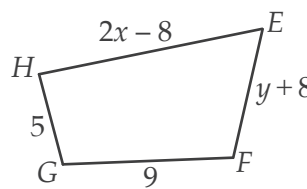
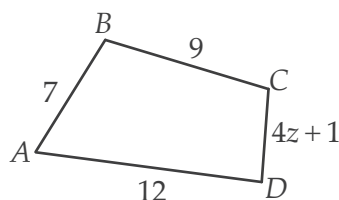
angle-side-angle

angle-angle-side

side-side-side

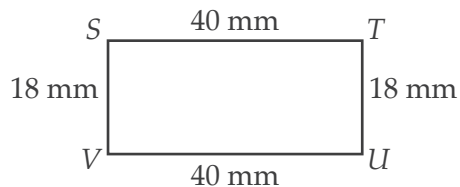
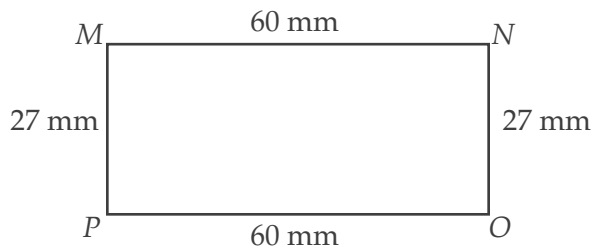


2. Given $ABCD \cong EFGH$, find the value of x , y , and z .



$x = \underline{\hspace{2cm}}$ $y = \underline{\hspace{2cm}}$ $z = \underline{\hspace{2cm}}$

3. Determine if the rectangles are similar using ratios. Write "yes" or "no" on the line.




★ PLEASE NOTE

Lesson 75 does not have an Extra Practice Worksheet.

Arcs, Sectors, and Angles in a Circle

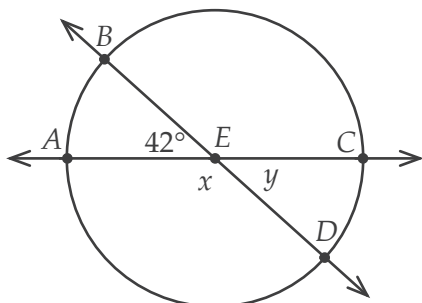
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EXTRA PRACTICE

 A calculator may be used for this entire worksheet. Round to the nearest hundredth if needed.

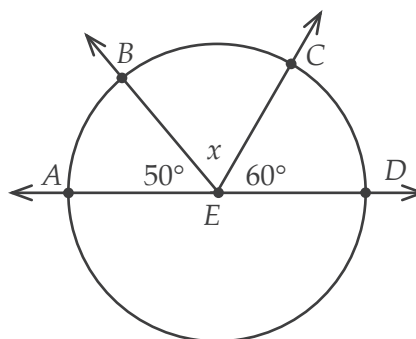
Find the missing angle measures in each figure.

1.



$x = \underline{\hspace{2cm}}$ $y = \underline{\hspace{2cm}}$

2.

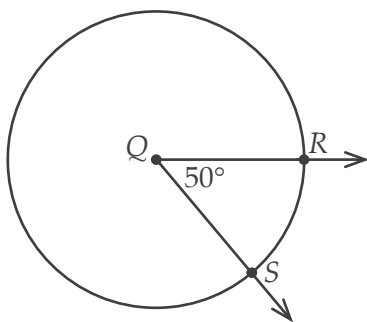


$x = \underline{\hspace{2cm}}$

Given the circumference, find the length of each arc.

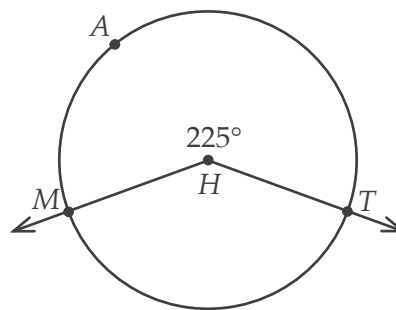
3. $C = 40$ m

Length of \widehat{RS} : $\underline{\hspace{2cm}}$



4. $C = 62$ in

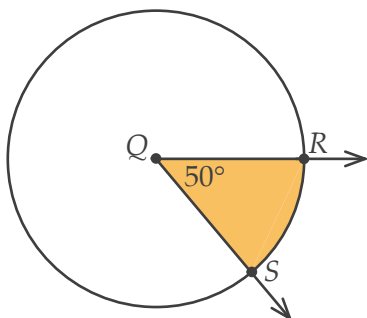
Length of \widehat{MAT} : $\underline{\hspace{2cm}}$



Given the total area, find the area of each shaded sector.

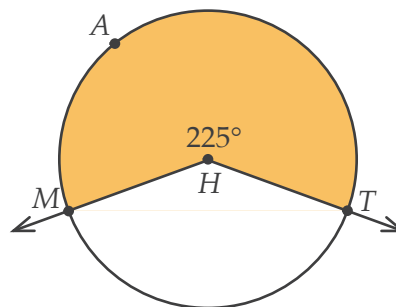
5. $A = 127$ m²

Area of shaded sector: $\underline{\hspace{2cm}}$



6. $A = 306$ in²

Area of shaded sector: $\underline{\hspace{2cm}}$



Volume of Composite Solids

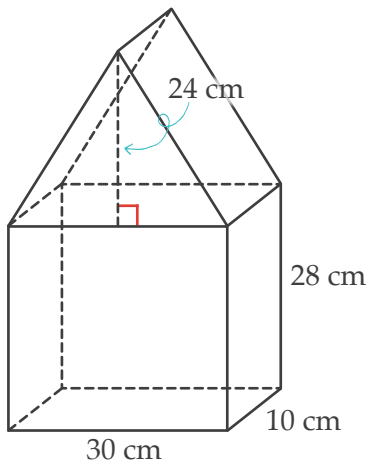


EXTRA PRACTICE

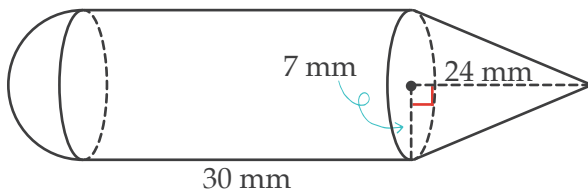
 A calculator may be used for this entire worksheet. Round to the nearest tenth when needed.

Find the volume of each composite solid.

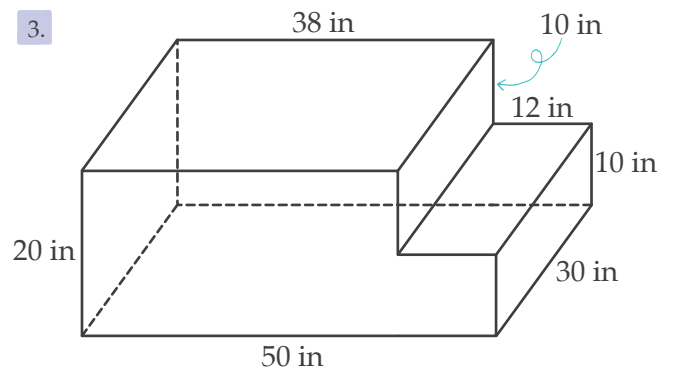
1.



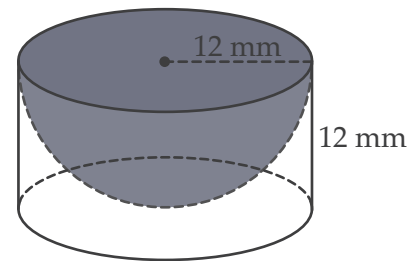
2.



3.



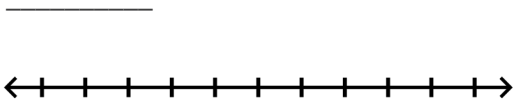
4. Note: The shaded part has been removed from the figure.



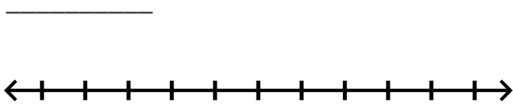
★ EXTRA PRACTICE

Solve and graph each inequality.

1. $x + 6 < 13$



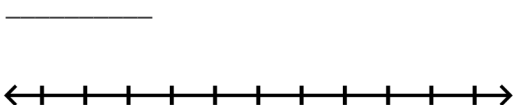
2. $x - 9 \geq -8$



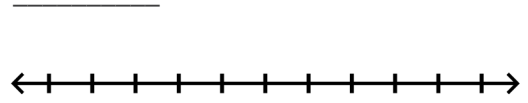
3. $5x \leq -15$



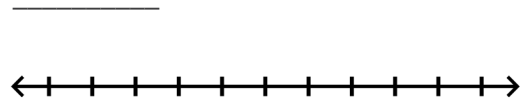
4. $\frac{-x}{4} > 2$



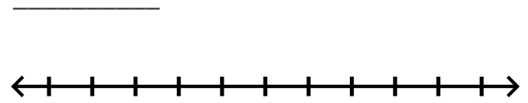
5. $3x - 1 \leq 5$



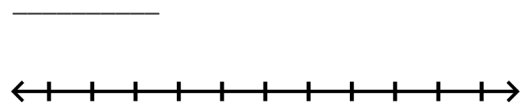
6. $\frac{3}{4}x + 6 > 9$



7. $6.3x + 7.4 < -5.2$



8. $-x - 12.2 \geq 0$



★ PLEASE NOTE

Lessons 88–90 do not have
Extra Practice Worksheets.

Reflections on the Coordinate Plane

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EXTRA PRACTICE

1. Write the coordinates of the image if the preimage is reflected across the x -axis.

ABC	$(3, -4)$	$(-3, 4)$	$(-6, -8)$
$A'B'C'$			

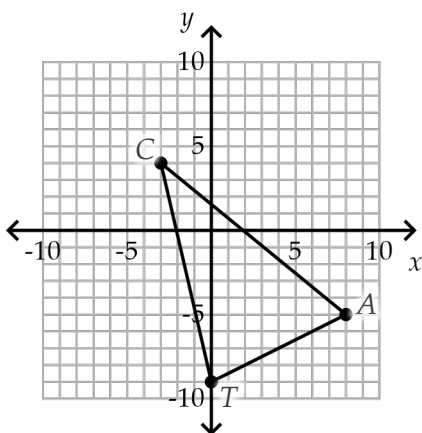
2. Write the coordinates of the image if the preimage is reflected across the y -axis.

ABC	$(-8, -3)$	$(0, 4)$	$(9, -11)$
$A'B'C'$			

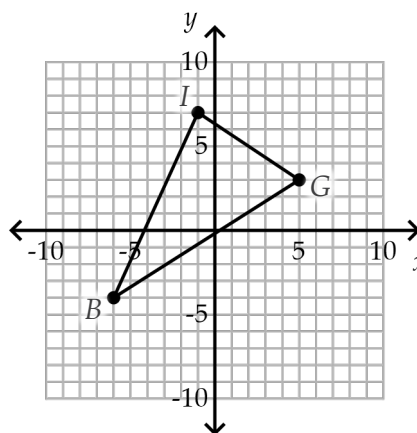
3. Write the coordinates of the image if the preimage is reflected across the x -axis and the y -axis.

DEF	$(-3, 6)$	$(1, -7)$	$(5, 9)$
$D'E'F'$			

4. a. Reflect $\triangle CAT$ across the y -axis.



5. a. Reflect $\triangle BIG$ across the x -axis.



- b. Fill in the table to list the coordinates of the preimage and image.

$\triangle CAT$			
$\triangle C'A'T'$			

- b. Fill in the table to list the coordinates of the preimage and image.

$\triangle BIG$			
$\triangle B'I'G'$			



EXTRA PRACTICE



A calculator may be used for this entire worksheet.

1. The Bogats family went to an amusement park. They recorded how long (in hours) they spent doing various activities during the 10 hours they were in the park. Answer the following questions using the pie chart.

a. By visual inspection, which sector has the greatest degree measure? What does this mean?

b. Using the given times, find the degree measure for each category.

Playing Games: _____

Walking: _____

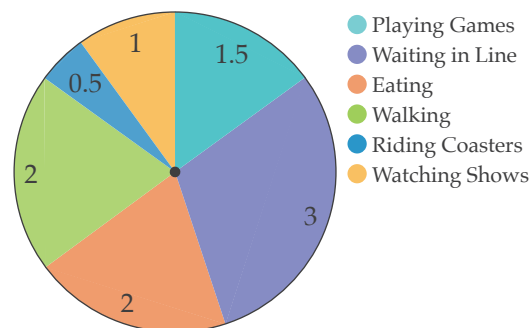
Waiting in Line: _____

Riding Coasters: _____

Eating: _____

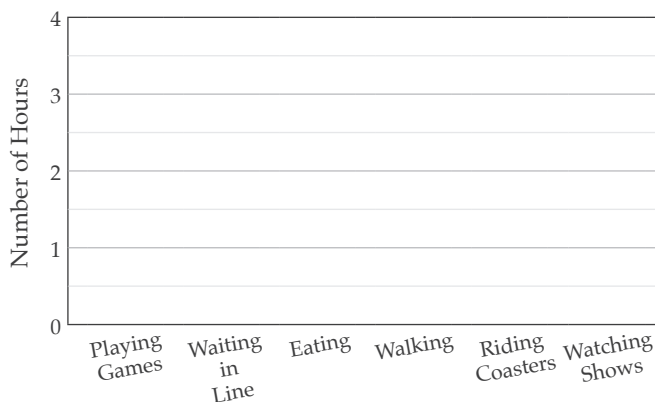
Watching Shows: _____

Time at Amusement Park



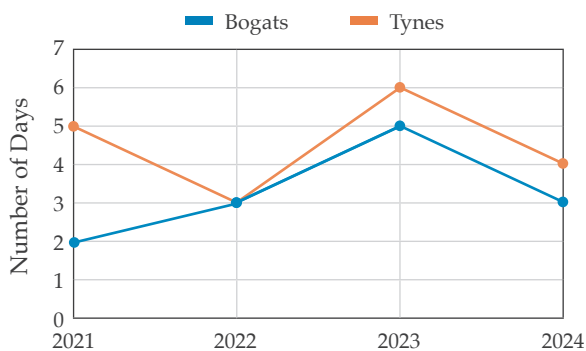
2. Make a bar graph for the Bogats' time at the amusement park.

Time at Amusement Park



3. Use the line graph below to answer the following questions.

Visits to Amusement Park



a. Which family spent more days at the amusement park in 2023?

b. In what year did both families spend the same number of days at the amusement park?

c. How many more days did the Tynes family spend at the amusement park in 2021 than the Bogats family?

Frequency Tables and Histograms

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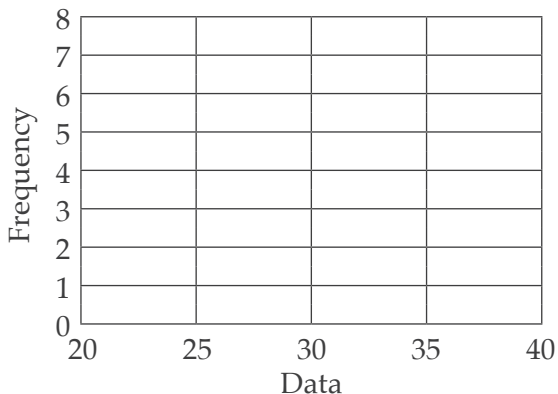
EXTRA PRACTICE

1. Complete the frequency table for the data set below. Remember that a point on the edge of an interval goes in the upper interval.

20, 21, 22, 22, 23, 24, 26, 26, 27, 28, 29, 30, 30, 30, 31, 32, 33, 34, 35, 36, 37, 39

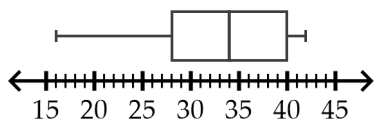
Data	Frequency
20–25	
25–30	
30–35	
35–40	

2. Create a histogram for the frequency table from Problem 1.

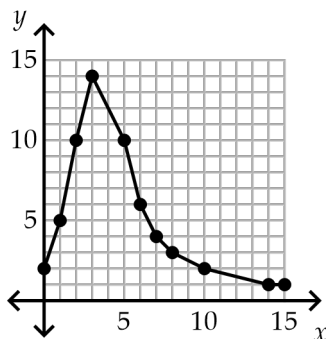


3. Determine whether each graph represents a data set that is symmetric, right-skewed, or left-skewed.

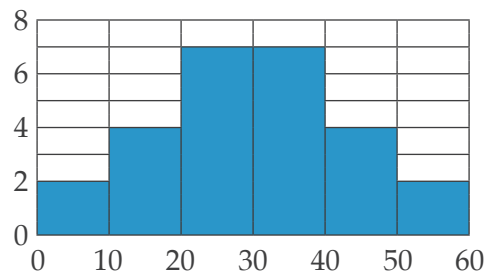
a. _____



b. _____



c. _____



UNITS

1-4

Simply Good and Beautiful



PRE-ALGEBRA

EXTRA PRACTICE
WORKSHEETS

MATH

8

ANSWERS & SOLUTIONS



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Note to Parents

This Pre-Algebra Extra Practice Answers & Solutions Manual includes detailed solutions for problems from the Extra Practice Worksheets. Final answers are highlighted for easy reference.

Place Value and Estimation

• • • • •

★ EXTRA PRACTICE SOLUTIONS

1. thousands
2. hundredths
3. hundred thousands
4. 421, 430, 440, 441, 460
5. 2.111, 2.12, 2.2, 2.24, 2.5
6. 0.008, 0.01, 0.013, 0.015, 0.018
7. $986 + 247 = 1233$
 $985.8 + 247.23 \approx 1233$
8. $430 \cdot 10 = 4300$
 $434.68 \cdot 10.33 \approx 4300$
9. $200 \div 100 = 2$
 $179 \div 74 \approx 2$
10. $0.9 - 0.2 = 0.7$
 $0.89987 - 0.19133 \approx 0.7$
11. $0.50 \div 0.02 = 25$
 $0.50161 \div 0.0166 \approx 25$
12. $830,000 + 246,000 = 1,076,000$
 $829,733 + 245,996 \approx 1,076,000$

Number Sets
• • • • •

★ EXTRA PRACTICE SOLUTIONS

1. a. $12 + 5 = 17$
b. 7
c. $12 + 5 + 10 + 7 = 34$
d. $12 + 5 + 10 = 27$
e. $12 + 7 = 19$
f. 5
g. 10

2.

Real Numbers

Rational Numbers $-2.45, 9.\bar{2}, \frac{1}{4}$ Integers -7 Whole Numbers 0

Natural Numbers

 $13, \sqrt{16}$ Irrational
Numbers $\pi, \sqrt{6}$

Simplifying Complex Expressions

• • • • •

★ EXTRA PRACTICE SOLUTIONS

$$\begin{aligned} 1. \quad & 6(5m^3 - (2m)^2) \\ & = 6(5m^3 - 4m^2) \\ & = 30m^3 - 24m^2 \end{aligned}$$

$$\begin{aligned} 2. \quad & 12((2x)^2 + (16x)^0 - 3x^2) \\ & = 12(4x^2 + 1 - 3x^2) \\ & = 12(x^2 + 1) \\ & = 12x^2 + 12 \end{aligned}$$

$$\begin{aligned} 3. \quad & \frac{27x^3}{(3xy^4)^2} \\ & = \frac{27x^3}{9x^2y^8} \\ & = 3x^{3-2}y^{0-8} \\ & = 3x^1y^{-8} \\ & = \frac{3x}{y^8} \end{aligned}$$

$$\begin{aligned} 4. \quad & \frac{8(f^4)^3 \cdot f^6}{(4f^3 \cdot f)^3} \\ & = \frac{8f^{12} \cdot f^6}{64f^9 \cdot f^3} \\ & = \frac{8f^{18}}{64f^{12}} \\ & = \frac{f^6}{8} \end{aligned}$$

$$\begin{aligned} 5. \quad & \sqrt{\frac{3^3 + 13 + 6 \cdot 10}{10 \cdot 2 \div 5}} \\ & = \sqrt{\frac{27 + 13 + 6 \cdot 10}{20 \div 5}} \\ & = \sqrt{\frac{27 + 13 + 60}{4}} \\ & = \sqrt{\frac{100}{4}} \\ & = \sqrt{25} \\ & = 5 \end{aligned}$$

$$\begin{aligned} 6. \quad & \frac{\sqrt{2 \cdot 7^2 - 34}}{|3 - 2 \cdot 8| + 4^2} \\ & = \frac{\sqrt{2 \cdot 49 - 34}}{|3 - 16| + 4^2} \\ & = \frac{\sqrt{98 - 34}}{|-13| + 4^2} \\ & = \frac{\sqrt{64}}{13 + 4^2} \\ & = \frac{8}{13 + 16} \\ & = \frac{8}{29} \end{aligned}$$

Relations and Functions

• • • • •

★ EXTRA PRACTICE SOLUTIONS

1. $-9, -4, -1, 0, 2$
2. $-10, -5, 0, 6, 7, 8$
3. Two ordered pairs have x -values of 2.
yes
4. All ordered pairs have different y -values.
no
5. one-to-many
The input of 2 has more than one output.

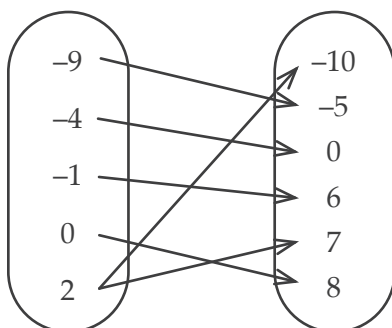
6. 8

7. -1

8.

Input	-9	-4	-1	0	2	2
Output	-5	0	6	8	-10	7

9.



Graphing from Standard Form

• • • • •

EXTRA PRACTICE SOLUTIONS

1. $5x + 6y = 30$

$$5x + 6(0) = 30$$

$$5x = 30$$

$$\frac{5x}{5} = \frac{30}{5}$$

$$x = 6$$

x-intercept: $(6, 0)$

$$5x + 6y = 30$$

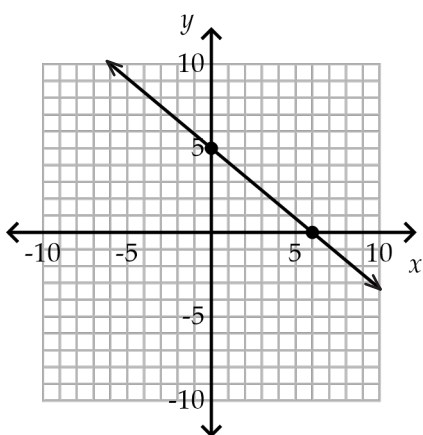
$$5(0) + 6y = 30$$

$$6y = 30$$

$$\frac{6y}{6} = \frac{30}{6}$$

$$y = 5$$

y-intercept: $(0, 5)$



2. $x - 3y = 9$

$$x - 3(0) = 9$$

$$x = 9$$

x-intercept: $(9, 0)$

$$x - 3y = 9$$

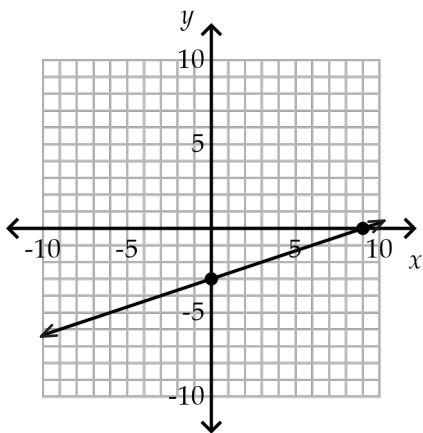
$$(0) - 3y = 9$$

$$-3y = 9$$

$$\frac{-3y}{-3} = \frac{9}{-3}$$

$$y = -3$$

y-intercept: $(0, -3)$



3. $2x + y = -8$

$$2x + (0) = -8$$

$$2x = -8$$

$$\frac{2x}{2} = \frac{-8}{2}$$

$$x = -4$$

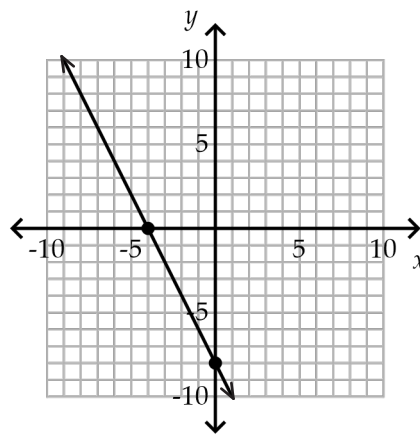
x-intercept: $(-4, 0)$

$$2x + y = -8$$

$$2(0) + y = -8$$

$$y = -8$$

y-intercept: $(0, -8)$



4. $4x - 2y = -4$

$$4x - 2(0) = -4$$

$$4x = -4$$

$$\frac{4x}{4} = \frac{-4}{4}$$

$$x = -1$$

x-intercept: $(-1, 0)$

$$4x - 2y = -4$$

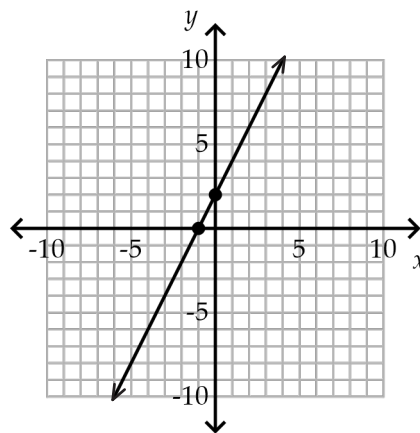
$$4(0) - 2y = -4$$

$$-2y = -4$$

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

$$y = 2$$

y-intercept: $(0, 2)$



Solving Equations with Radicals

EXTRA PRACTICE SOLUTIONS

$$\begin{aligned}
 1. \quad & 6\sqrt{x} = 12 \\
 & \frac{6\sqrt{x}}{6} = \frac{12}{6} \\
 & \sqrt{x} = 2 \\
 & (\sqrt{x})^2 = 2^2 \\
 & x = 4
 \end{aligned}$$

Check:

$$\begin{aligned}
 6\sqrt{4} &\stackrel{?}{=} 12 \\
 6 \cdot 2 &\stackrel{?}{=} 12 \\
 12 &= 12 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 2. \quad & \sqrt{x-4} = 2 \\
 & (\sqrt{x-4})^2 = 2^2 \\
 & x-4 = 4 \\
 & x-4+4 = 4+4 \\
 & x = 8
 \end{aligned}$$

Check:

$$\begin{aligned}
 \sqrt{8-4} &\stackrel{?}{=} 2 \\
 \sqrt{4} &\stackrel{?}{=} 2 \\
 2 &= 2 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 3. \quad & \sqrt{x-1} + 8 = 3 \\
 & \sqrt{x-1} + 8 - 8 = 3 - 8 \\
 & \sqrt{x-1} = -5 \\
 & (\sqrt{x-1})^2 = (-5)^2 \\
 & x-1 = 25 \\
 & x-1+1 = 25+1 \\
 & x = 26
 \end{aligned}$$

Check:

$$\begin{aligned}
 \sqrt{26-1} + 8 &\stackrel{?}{=} 3 \\
 \sqrt{25} + 8 &\stackrel{?}{=} 3 \\
 5 + 8 &\stackrel{?}{=} 3 \\
 13 &\neq 3
 \end{aligned}$$

no solution

$$\begin{aligned}
 4. \quad & \frac{1}{2}\sqrt{x+5} = 1 \\
 2 \cdot \frac{1}{2}\sqrt{x+5} &= 1 \cdot 2 \\
 \sqrt{x+5} &= 2 \\
 (\sqrt{x+5})^2 &= 2^2 \\
 x+5 &= 4 \\
 x+5-5 &= 4-5 \\
 x &= -1
 \end{aligned}$$

Check:

$$\begin{aligned}
 \frac{1}{2}\sqrt{-1+5} &\stackrel{?}{=} 1 \\
 \frac{1}{2}\sqrt{4} &\stackrel{?}{=} 1 \\
 \frac{1}{2} \cdot 2 &\stackrel{?}{=} 1 \\
 1 &= 1 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 5. \quad & -\sqrt[3]{x} = 4 \\
 & \frac{-\sqrt[3]{x}}{-1} = \frac{4}{-1} \\
 & \sqrt[3]{x} = -4 \\
 & (\sqrt[3]{x})^3 = (-4)^3 \\
 & x = -64
 \end{aligned}$$

Check:

$$\begin{aligned}
 -\sqrt[3]{-64} &\stackrel{?}{=} 4 \\
 -(-4) &\stackrel{?}{=} 4 \\
 4 &= 4 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 6. \quad & \sqrt[3]{x-3} = 2 \\
 & (\sqrt[3]{x-3})^3 = 2^3 \\
 & x-3 = 8 \\
 & x-3+3 = 8+3 \\
 & x = 11
 \end{aligned}$$

Check:

$$\begin{aligned}
 \sqrt[3]{11-3} &\stackrel{?}{=} 2 \\
 \sqrt[3]{8} &\stackrel{?}{=} 2 \\
 2 &= 2 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 7. \quad & \sqrt[3]{x+2} + 3 = 1 \\
 & \sqrt[3]{x+2} + 3 - 3 = 1 - 3 \\
 & \sqrt[3]{x+2} = -2 \\
 & (\sqrt[3]{x+2})^3 = (-2)^3 \\
 & x+2 = -8 \\
 & x+2-2 = -8-2 \\
 & x = -10
 \end{aligned}$$

Check:

$$\begin{aligned}
 \sqrt[3]{-10+2} + 3 &\stackrel{?}{=} 1 \\
 \sqrt[3]{-8} + 3 &\stackrel{?}{=} 1 \\
 -2 + 3 &\stackrel{?}{=} 1 \\
 1 &= 1 \quad \checkmark
 \end{aligned}$$

$$\begin{aligned}
 8. \quad & 5\sqrt[3]{x} - 4 = 11 \\
 5\sqrt[3]{x} - 4 + 4 &= 11 + 4 \\
 5\sqrt[3]{x} &= 15 \\
 \frac{5\sqrt[3]{x}}{5} &= \frac{15}{5} \\
 \sqrt[3]{x} &= 3 \\
 (\sqrt[3]{x})^3 &= 3^3 \\
 x &= 27
 \end{aligned}$$

Check:

$$\begin{aligned}
 5\sqrt[3]{27} - 4 &\stackrel{?}{=} 11 \\
 5 \cdot 3 - 4 &\stackrel{?}{=} 11 \\
 15 - 4 &\stackrel{?}{=} 11 \\
 11 &= 11 \quad \checkmark
 \end{aligned}$$

Fractions, Decimals, and Percents

• • • • •

★ EXTRA PRACTICE SOLUTIONS

	Fraction	Decimal	Percent
1.	$\frac{75}{100} = \frac{3}{4}$	$75 \div 100 = 0.75$	75%
2.	$\frac{35}{100} = \frac{7}{20}$	0.35	$0.35 \cdot 100 = 35$ 35%
3.	$\frac{5}{8}$	0.625 Long division work is shown after the table.	$0.625 \cdot 100 = 62.5$ 62.5%
4.	$\frac{11}{20}$	0.55 Long division work is shown after the table.	$\frac{11}{20} = \frac{55}{100} = 55$ 55%
5.	$2\frac{48}{100} = 2\frac{12}{25}$	2.48	$2.48 \cdot 100 = 248$ 248%
6.	$1\frac{30}{100} = 1\frac{3}{10}$	$130 \div 100 = 1.30$	130%
7.	$3\frac{1}{25}$	$304 \div 100 = 3.04$	$3\frac{1}{25} = 3\frac{4}{100} = 304$ 304%
8.	$8\frac{50}{100} = 8\frac{1}{2}$	$850 \div 100 = 8.50$	850%
9.	$\frac{22}{100} = \frac{11}{50}$	0.22	$0.22 \cdot 100 = 22$ 22%

Long division for Problem 3: $8 \overline{)5.000}$

$$\begin{array}{r}
 0.625 \\
 8 \overline{)5.000} \\
 \underline{-48} \\
 20 \\
 \underline{-16} \\
 40 \\
 \underline{-40} \\
 0
 \end{array}$$

Long division for Problem 4: $20 \overline{)11.00}$

$$\begin{array}{r}
 0.55 \\
 20 \overline{)11.00} \\
 \underline{-100} \\
 100 \\
 \underline{-100} \\
 0
 \end{array}$$

Unit Conversions and Unit Multipliers

.

★ EXTRA PRACTICE SOLUTIONS

$$1. 5 \cancel{\text{km}} \cdot \frac{1 \text{ mi}}{1.6 \cancel{\text{km}}} = \frac{5 \text{ mi}}{1.6} \approx 3.13 \text{ mi}$$

$$2. 270 \cancel{\text{in}} \cdot \frac{1 \text{ yd}}{36 \cancel{\text{in}}} = \frac{270 \text{ yd}}{36} = 7.5 \text{ yd}$$

$$3. 45 \cancel{\text{gal}} \cdot \frac{8 \text{ pt}}{1 \cancel{\text{gal}}} = \frac{45 \cdot 8 \text{ pt}}{1} = 360 \text{ pt}$$

$$4. 26.2 \cancel{\text{mi}} \cdot \frac{1.6 \text{ km}}{1 \cancel{\text{mi}}} = \frac{26.2 \cdot 1.6 \text{ km}}{1} = 41.92 \text{ km}$$

$$5. 2 \cancel{\text{L}} \cdot \frac{1 \cancel{\text{gal}}}{3.8 \cancel{\text{L}}} \cdot \frac{4 \text{ qt}}{1 \cancel{\text{gal}}} = \frac{2 \cdot 4 \text{ qt}}{3.8} \approx 2.11 \text{ qt}$$

$$6. 65 \cancel{\text{kg}} \cdot \frac{2.2 \text{ lb}}{1 \cancel{\text{kg}}} = \frac{65 \cdot 2.2 \text{ lb}}{1} = 143 \text{ lb}$$

$$7. 128 \cancel{\text{oz}} \cdot \frac{28.35 \text{ g}}{1 \cancel{\text{oz}}} = \frac{128 \cdot 28.35 \text{ g}}{1} = 3628.8 \text{ g}$$

$$8. 125 \cancel{\text{in}} \cdot \cancel{\text{in}} \cdot \frac{2.54 \text{ cm}}{1 \cancel{\text{in}}} \cdot \frac{2.54 \text{ cm}}{1 \cancel{\text{in}}} = \frac{125 \cdot 2.54 \cdot 2.54 \text{ cm} \cdot \text{cm}}{1} = 806.45 \text{ cm}^2$$

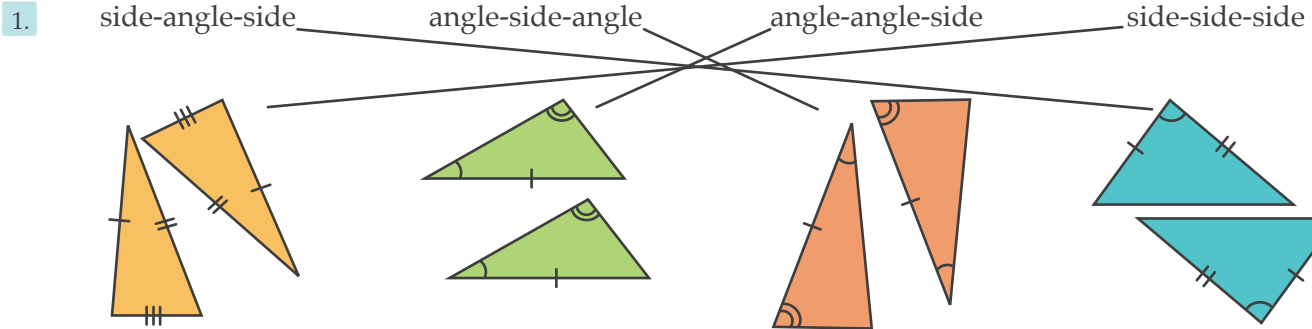
$$9. 315 \cancel{\text{m}} \cdot \cancel{\text{m}} \cdot \frac{1.1 \text{ yd}}{1 \cancel{\text{m}}} \cdot \frac{1.1 \text{ yd}}{1 \cancel{\text{m}}} \cdot \frac{3 \text{ ft}}{1 \cancel{\text{yd}}} \cdot \frac{3 \text{ ft}}{1 \cancel{\text{yd}}} = \frac{315 \cdot 1.1 \cdot 1.1 \cdot 3 \cdot 3 \text{ ft} \cdot \text{ft}}{1} = 3430.35 \text{ ft}^2$$

$$10. 3 \cancel{\text{km}} \cdot \cancel{\text{km}} \cdot \frac{1 \cancel{\text{mi}}}{1.6 \cancel{\text{km}}} \cdot \frac{1 \cancel{\text{mi}}}{1.6 \cancel{\text{km}}} \cdot \frac{1760 \text{ yd}}{1 \cancel{\text{mi}}} \cdot \frac{1760 \text{ yd}}{1 \cancel{\text{mi}}} = \frac{3 \cdot 1760 \cdot 1760 \text{ yd} \cdot \text{yd}}{1.6 \cdot 1.6} = 3,630,000 \text{ yd}^2$$

Congruence and Similarity in Figures

• • • • •

EXTRA PRACTICE SOLUTIONS



2. $HE = DA$
 $2x - 8 = 12$
 $2x - 8 + 8 = 12 + 8$
 $2x = 20$
 $\frac{2x}{2} = \frac{20}{2}$
 $x = 10$

$EF = AB$
 $y + 8 = 7$
 $y + 8 - 8 = 7 - 8$
 $y = -1$

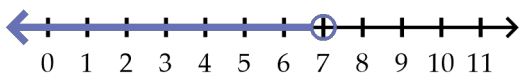
$CD = GH$
 $4z + 1 = 5$
 $4z + 1 - 1 = 5 - 1$
 $4z = 4$
 $\frac{4z}{4} = \frac{4}{4}$
 $z = 1$

3. $\frac{MN}{ST} = \frac{60}{40} = 1.5$
 $\frac{NO}{TU} = \frac{27}{18} = 1.5$
 $\frac{OP}{UV} = \frac{60}{40} = 1.5$
 $\frac{PM}{VS} = \frac{27}{18} = 1.5$

yes

EXTRA PRACTICE SOLUTIONS

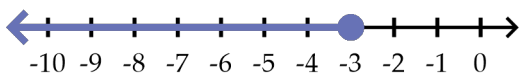
1. $x + 6 < 13$
 $x + 6 - 6 < 13 - 6$
 $x < 7$



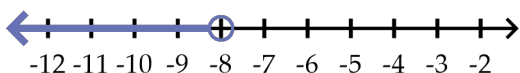
2. $x - 9 \geq -8$
 $x - 9 + 9 \geq -8 + 9$
 $x \geq 1$



3. $5x \leq -15$
 $\frac{5x}{5} \leq \frac{-15}{5}$
 $x \leq -3$



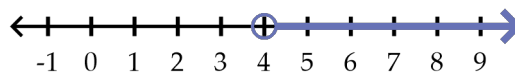
4. $\frac{-x}{4} > 2$
 $-4 \cdot \frac{-x}{4} > 2 \cdot (-4)$
 $x < -8$



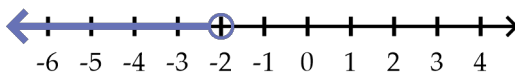
5. $3x - 1 \leq 5$
 $3x - 1 + 1 \leq 5 + 1$
 $3x \leq 6$
 $\frac{3x}{3} \leq \frac{6}{3}$
 $x \leq 2$



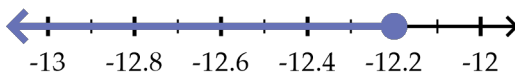
6. $\frac{3}{4}x + 6 > 9$
 $\frac{3}{4}x + 6 - 6 > 9 - 6$
 $\frac{3}{4}x > 3$
 $\frac{4}{3} \cdot \frac{3}{4}x > 3 \cdot \frac{4}{3}$
 $x > 4$



7. $6.3x + 7.4 < -5.2$
 $6.3x + 7.4 - 7.4 < -5.2 - 7.4$
 $6.3x < -12.6$
 $\frac{6.3x}{6.3} < \frac{-12.6}{6.3}$
 $x < -2$



8. $-x - 12.2 \geq 0$
 $-x - 12.2 + 12.2 \geq 0 + 12.2$
 $-x \geq 12.2$
 $\frac{-x}{-1} \geq \frac{12.2}{-1}$
 $x \leq -12.2$



Graphing Linear Inequalities



★ EXTRA PRACTICE SOLUTIONS

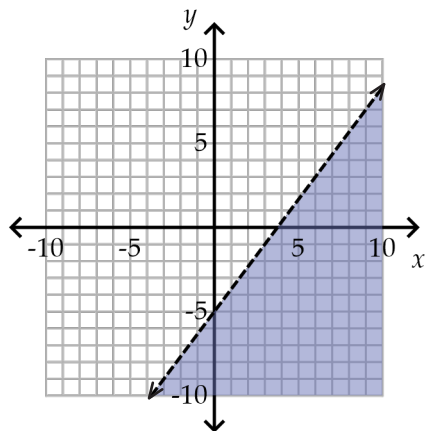
1. Slope: $\frac{4}{3}$
 y -intercept: $(0, -5)$

Test $(0, 0)$:

$$y < \frac{4}{3}x - 5$$

$$0 < \frac{4}{3}(0) - 5$$

$$0 < -5 \quad \times$$



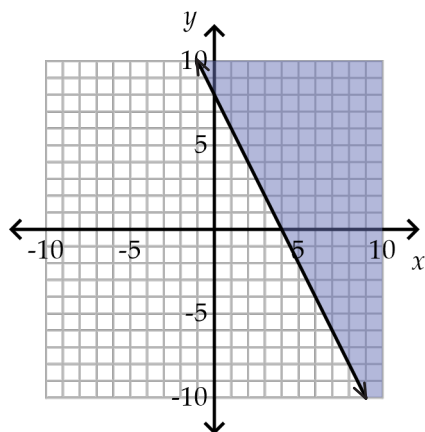
2. Slope: -2
 y -intercept: $(0, 8)$

Test $(0, 0)$:

$$y \geq -2x + 8$$

$$0 \geq -2(0) + 8$$

$$0 \geq 8 \quad \times$$



3. $3x - 2(0) = -12$
 $3x = -12$
 $\frac{3x}{3} = \frac{-12}{3}$
 $x = -4$
 $(-4, 0)$

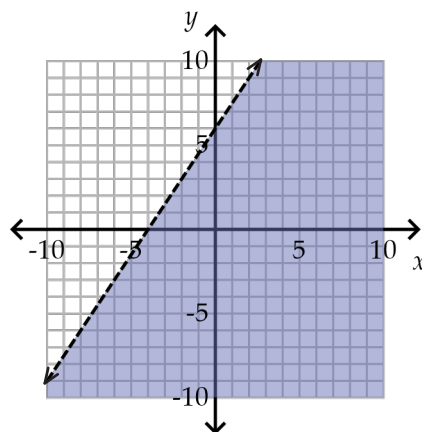
- $3(0) - 2y = -12$
 $-2y = -12$
 $\frac{-2y}{-2} = \frac{-12}{-2}$
 $y = 6$
 $(0, 6)$

Test $(0, 0)$:

$$3x - 2y > -12$$

$$3(0) - 2(0) > -12$$

$$0 > -12 \quad \checkmark$$



$$4. \quad 2x + 4(0) = 16$$

$$2x = 16$$

$$\frac{2x}{2} = \frac{16}{2}$$

$$x = 8$$

$$(8, 0)$$

$$2(0) + 4y = 16$$

$$4y = 16$$

$$\frac{4y}{4} = \frac{16}{4}$$

$$y = 4$$

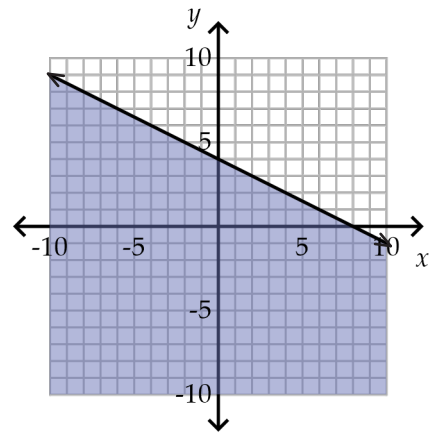
$$(0, 4)$$

Test $(0, 0)$:

$$2x + 4y \leq 16$$

$$2(0) + 4(0) \stackrel{?}{\leq} 16$$

$$0 \stackrel{?}{\leq} 16 \checkmark$$



Translations on the Coordinate Plane

• • • • •

EXTRA PRACTICE SOLUTIONS

1. Rule: $(x, y) \rightarrow (x - 1, y)$

<i>ABC</i>	(0,0)	(2,6)	(4,0)
<i>A'B'C'</i>	(0-1,0) (-1,0)	(2-1,6) (1,6)	(4-1,0) (3,0)

2. Rule: $(x, y) \rightarrow (x, y + 6)$

<i>ABC</i>	(0,0)	(2,6)	(4,0)
<i>A'B'C'</i>	(0,0+6) (0,6)	(2,6+6) (2,12)	(4,0+6) (4,6)

3. Rule: $(x, y) \rightarrow (x + 9, y - 4)$

<i>ABC</i>	(-8,-4)	(-6,-1)	(-2,-4)
<i>A'B'C'</i>	(-8+9,-4-4) (1,-8)	(-6+9,-1-4) (3,-5)	(-2+9,-4-4) (7,-8)

4. Rule: $(x, y) \rightarrow (x - 5, y + 11)$

<i>ABC</i>	(-8,-4)	(-6,-1)	(-2,-4)
<i>A'B'C'</i>	(-8-5,-4+11) (-13,7)	(-6-5,-1+11) (-11,10)	(-2-5,-4+11) (-7,7)

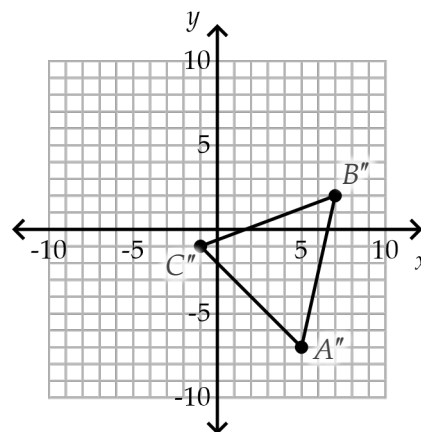
5. Rule: $(x, y) \rightarrow (x + 3, y + 9 - 5) \rightarrow (x + 3, y + 4)$

<i>ABC</i>	(5,-4)	(7,5)	(-1,2)
<i>A''B''C''</i>	(5+3,-4+4) (8,0)	(7+3,5+4) (10,9)	(-1+3,2+4) (2,6)

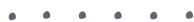
6. Rule: $(x, y) \rightarrow (x - 10 + 10, y - 4 + 1) \rightarrow (x, y - 3)$

<i>ABC</i>	(5,-4)	(7,5)	(-1,2)
<i>A''B''C''</i>	(5,-4-3) (5,-7)	(7,5-3) (7,2)	(-1,2-3) (-1,-1)

7.

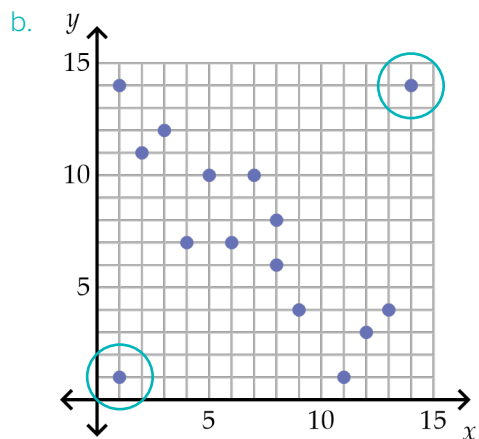
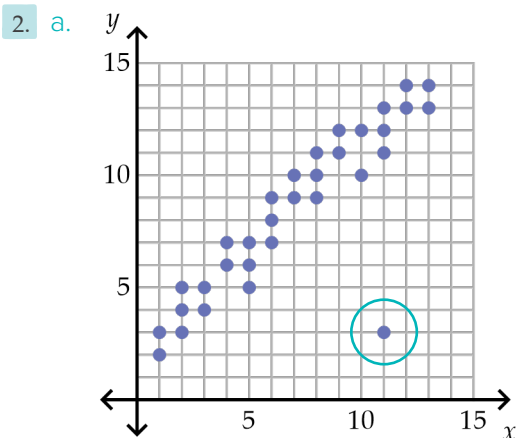


Scatter Plots



EXTRA PRACTICE SOLUTIONS

1. a. positive, strong, linear
- b. none
- c. negative, weak, nonlinear



3. a. positive
- b. none

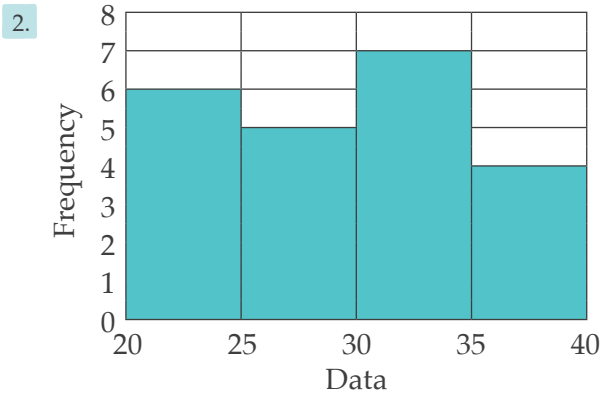
Frequency Tables and Histograms

• • • • •

★ EXTRA PRACTICE SOLUTIONS

1.

Data	Frequency
20–25	I
25–30	
30–35	II
35–40	



- 3.
- a. left-skewed
 - b. right-skewed
 - c. symmetric

Two-Way Tables

• • • • •

EXTRA PRACTICE SOLUTIONS

1.

	Math	Science	Language Arts	Social Studies	Total
6th Grade	15	10	3	4	$15 + 10 + 3 + 4 = 32$
7th Grade	10	12	8	6	$10 + 12 + 8 + 6 = 36$
8th Grade	5	3	9	15	$5 + 3 + 9 + 15 = 32$
Total	$15 + 10 + 5 = 30$	$10 + 12 + 3 = 25$	$3 + 8 + 9 = 20$	$4 + 6 + 15 = 25$	$32 + 36 + 32 = 100$

2. 100

3. 7th grade

4. math

5. math

6. science

7. science and social studies

8. 12

9. 7th grade, language arts

10. 7th grade

11.

	Math	Science	Language Arts	Social Studies	Total
6th Grade	$\frac{15}{100} = 15\%$	$\frac{10}{100} = 10\%$	$\frac{3}{100} = 3\%$	$\frac{4}{100} = 4\%$	$\frac{32}{100} = 32\%$
7th Grade	$\frac{10}{100} = 10\%$	$\frac{12}{100} = 12\%$	$\frac{8}{100} = 8\%$	$\frac{6}{100} = 6\%$	$\frac{36}{100} = 36\%$
8th Grade	$\frac{5}{100} = 5\%$	$\frac{3}{100} = 3\%$	$\frac{9}{100} = 9\%$	$\frac{15}{100} = 15\%$	$\frac{32}{100} = 32\%$
Total	$\frac{30}{100} = 30\%$	$\frac{25}{100} = 25\%$	$\frac{20}{100} = 20\%$	$\frac{25}{100} = 25\%$	$\frac{100}{100} = 100\%$