

Algebra

Summer Work

Show all of your work for the problems in this packet, even the multiple choice ones. If you do not have written work to show, explain your thinking.



Extra Practice and Homework

The Real Number System

Activity 10 Operations with Fractions and Mixed Numbers

Evaluate each expression. Give your answer in simplest form.

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

2 $\frac{4}{15} + \left(-\frac{7}{9}\right)$

3 $\frac{1}{6} - \left(-\frac{2}{3}\right)$

4 $-\frac{1}{5} - \frac{2}{15}$

5 $\frac{1}{3} - \left(-\frac{2}{5}\right) - \frac{3}{4}$

6 $\frac{-4}{9} + \left(\frac{-5}{6}\right) + \left(\frac{-1}{3}\right)$

Evaluate each product. Give your answer in simplest form.

7 $-\frac{3}{4} \cdot \frac{5}{12}$

8 $-2\frac{1}{4} \cdot \frac{8}{27}$

9 $-\frac{14}{25} \cdot \left(-1\frac{3}{7}\right)$

10 $1\frac{8}{27} \cdot \left(-2\frac{2}{5}\right)$

$$11 \quad -2\frac{2}{3} \cdot \left(-3\frac{3}{4}\right)$$

$$12 \quad \frac{2}{15} \cdot \left(-1\frac{2}{3}\right)$$

Evaluate each quotient. Give your answer in simplest form.

$$13 \quad -\frac{1}{4} \div \frac{3}{8}$$

$$14 \quad \frac{2}{5} \div \left(-\frac{4}{35}\right)$$

$$15 \quad 1\frac{2}{3} \div \left(-3\frac{1}{3}\right)$$

$$16 \quad -2\frac{3}{4} \div \left(-1\frac{3}{8}\right)$$

$$17 \quad \frac{-10}{\left(\frac{5}{13}\right)}$$

$$18 \quad \frac{\left(\frac{2}{3}\right)}{-16}$$

$$19 \quad \frac{\left(-\frac{4}{5}\right)}{\left(-\frac{7}{20}\right)}$$

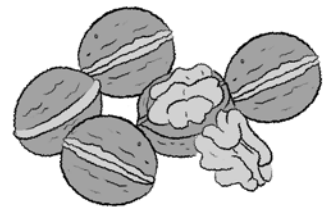
$$20 \quad \frac{\left(-2\frac{2}{5}\right)}{\left(1\frac{1}{5}\right)}$$

Solve.

- 21 A restaurant used $8\frac{5}{6}$ pounds of rice on Monday, and $5\frac{1}{6}$ pounds of rice on Tuesday. How many more pounds of rice were used on Monday than on Tuesday?

- 22 Riley has $9\frac{2}{3}$ feet of cloth. She needs to cut it into lengths of $\frac{1}{3}$ foot. How many complete lengths can she cut?

- 23 A recipe calls for $2\frac{1}{2}$ cups of walnuts. A chef has only $\frac{5}{6}$ cup of walnuts. How many more cups of walnuts does the chef need for the recipe?

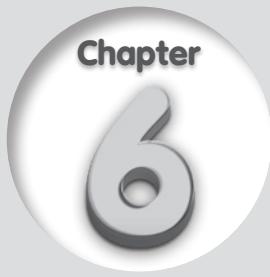


24 The sum of two mixed numbers is $-9\frac{2}{3}$. One of the numbers is $-2\frac{7}{9}$. Find the other number.

25 The masses of Parcel P, Parcel Q, and Parcel R are $4\frac{1}{2}$, $3\frac{2}{5}$, and $6\frac{4}{5}$ pounds respectively. Find the average mass of the three parcels.



26 A mixed number is divided by $1\frac{4}{5}$, and the quotient is $2\frac{1}{3}$. What is the mixed number?



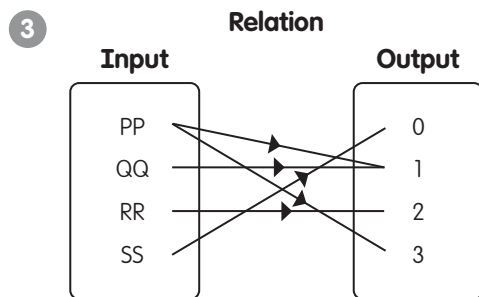
Extra Practice and Homework Functions

Activity 1 Understanding Relations and Functions

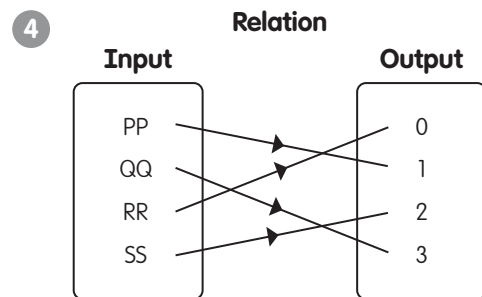
Given the relation described, identify the input and the output.

- Chase wants to know his weekly salary when he works for a certain number of hours per week at a constant hourly pay rate.
- Mr. Morris wants to know how many miles he can drive his car for when the fuel tank is filled with various gallons of gasoline.

Identify the type of relation between the inputs and the outputs.



The relation between the inputs and the outputs is a _____ -to- _____ relation.



The relation between the inputs and the outputs is a _____ -to- _____ relation.

Solve.

- 5 The table shows the favorite color of each student in a class. Draw a mapping diagram to represent the relation between the favorite color and the number of students. Identify the type of relation between the favorite color and the number of students.

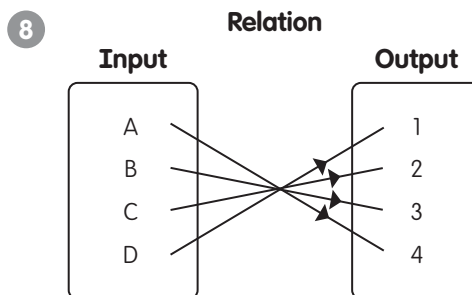
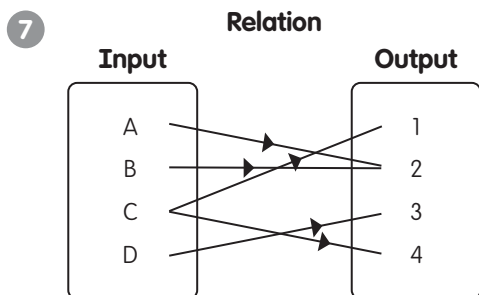
Input, Favorite Colors	Red	Blue	Yellow	Violet	Green
Output, Number of Students	6	10	3	3	3

- 6 The table shows the number of signatures collected each day for seven days by a citizen wanting to run for town council.

Input, Number of Signatures	55	43	55	30	75	55	62
Output, Day	1	2	3	4	5	6	7

Draw a mapping diagram to represent the relation between the number of signatures collected on each day. Identify the type of relation between the number of signatures and the day.

Identify the type of relation represented by each mapping diagram. Determine whether the relation is a function. Explain.



State whether each statement is True or False. Explain.

- 9 A one-to-one relation is always a function.
- 10 A function is a special type of relation.
- 11 When Melanie clicks on any of the icons in a folder on her computer, it will open only the file that she clicks on. She says the folder represents a function.
- 12 In a relation where the input is the age of the students in a class and the output is the height of the students, the relation is a function.

Solve.

- 13 The table shows the number of available parking spots in each of the five parking garages.

Input, Garage	A	B	C	D	E
Output, Number of Available Parking Spots	425	510	418	425	608

- a Draw a mapping diagram to represent the relation between each garage and the number of available parking spots.
- b From the mapping diagram, identify the relation between the garages and the number available parking spots.
- c Determine whether the relation represented by the mapping diagram is a function. Explain.

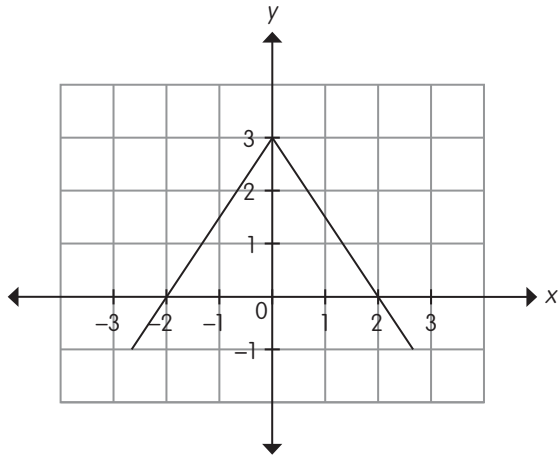
- 14 The table shows the number of shoes produced by each of five factories and the production cost incurred during the week.

Factory	A	B	C	D	E
Number of Shoes Produced	674	480	535	605	674
Production Cost	\$10,110	\$7,200	\$8,025	\$9,075	\$10,110

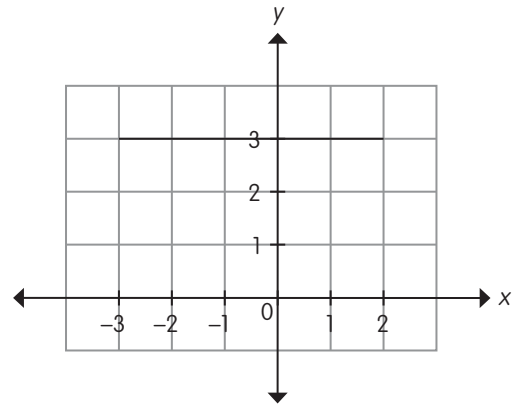
- a Draw a mapping diagram to represent the relation between the factories and the number of shoes produced.
- b From the mapping diagram, identify the relation between the factory and the number of shoes produced. Then tell whether the relation represented by the mapping diagram is a function. Explain.
- c Draw a mapping diagram to represent the relation between the production costs incurred by the factories and the number of shoes produced. Identify the relation between the production cost and the number of shoes produced. Then tell whether the relation represented by the mapping diagram is a function. Explain.

Which of these graphs represents a function? Explain.

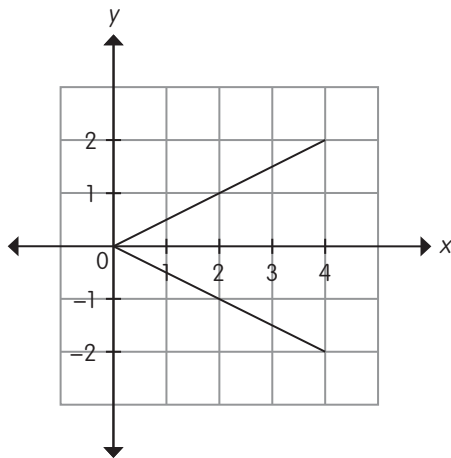
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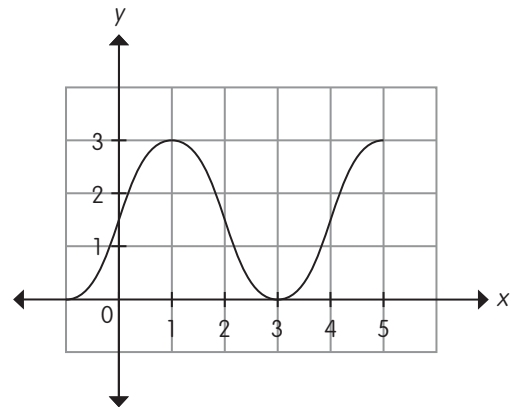
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Chapter
2

Extra Practice and Homework

Algebraic Expressions

Activity 3 Simplifying Algebraic Expressions

Simplify each expression with one variable.

1 $2.1x + 0.8x - 3$

2 $1.6y + 1.9y + 1.3$

Group the like terms together.



3 $3.5p + (-2.8p) - 1$

4 $\frac{5}{9}a + \frac{4}{9}a + \frac{5}{9}$

5 $\frac{7}{8}b + \frac{1}{4}b - 3$

6 $\frac{9}{2}m + \left(-\frac{1}{3}m\right) + 7$

Simplify each expression with three algebraic terms.

7 $1.5x + 0.8x + 0.6x$

8 $5.4a - 2.7a + (-0.8a)$

9 $4.8b + 1.2b - 3.9b$

10 $\frac{1}{7}p + \frac{4}{7}p + \frac{1}{7}p$

11 $\frac{7}{9}q + \frac{1}{3}q + \frac{1}{9}q$

12 $\frac{3}{4}m + \frac{2}{3}m + \left(-\frac{1}{6}m\right)$

Simplify each expression with one variable.

13 $7a - 5 - 3a$

14 $16b - 9 + 5b$

15 $1.1p + 2.3 + (-0.5p)$

16 $6.3q - 1.8 - 5.7q$

17 $\frac{3}{5}m + \frac{2}{3} + \frac{7}{10}m$

18 $\frac{5}{6}n - \frac{2}{3} + \left(-\frac{1}{2}n\right)$

Simplify each expression with two variables.

19 $5x + x + 5y$

20 $24m - 16m - (-5n)$

21 $11a + 3a + 5b - b$

22 $9b - 2a + 3b + (-a)$

23 $2.7m + 0.5m + 3.2n + 0.8n$

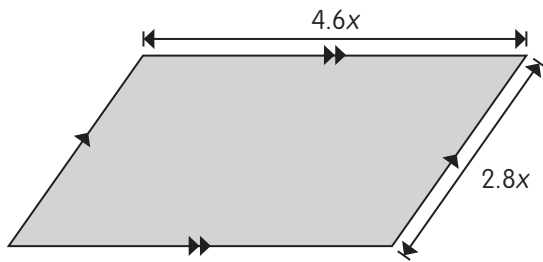
24 $18.5p - 16.6p - 4.3q - (-2.7q)$

25 $\frac{3}{7}x + \frac{1}{7}x - \frac{1}{6}y + \frac{5}{6}y$

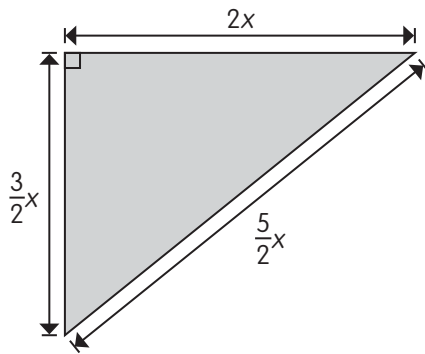
26 $\frac{3}{4}p + \left(-\frac{1}{2}p\right) + \frac{5}{9}q - \frac{1}{3}q$

Find the perimeter of each figure.

27



28



Chapter
3

Extra Practice and Homework

Algebraic Equations and Inequalities

Activity 2 Solving Algebraic Equations

Solve each equation with variables on the same side.

1 $5x + 3 = 7$

2 $4y - 7 = 5$

3 $9p + 5 = -13$

4 $23 = 6x - 1$

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

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

$$7 \quad \frac{5}{8}p = \frac{9}{4} - \frac{3}{8}$$

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

$$9 \quad 5.7 + 0.3y = 6.9$$

$$10 \quad 4.2 + 2.5a = 9.2$$

$$11 \quad 3.2y - 7 = 9$$

$$12 \quad 7.8y - 4.9 - 5.4y = 2.3$$

Solve each equation involving parentheses.

13 $4(3x - 2) = 16$

14 $5(4y - 3) = 45$

15 $3(4n - 1) - 7n = 17$

16 $6(5c - 2) - 10c = 13$

17 $\frac{3}{4}(5a - 3) = \frac{3}{8}$

18 $\frac{4}{5}(m - 1) - \frac{1}{5}m = 1$

Work out the expressions
in the parentheses first.



$$19 \quad \frac{2}{5}x - \frac{1}{4}(x - 8) = \frac{13}{2}$$

$$20 \quad 6(3.2y - 1) = 3.6$$

$$21 \quad 1.8(5a + 3) + 5.6 = 29$$

$$22 \quad \frac{6}{5}(2f - 3) - 3f = \frac{3}{2}$$

$$23 \quad 0.5(2m - 3) - 0.8m = 2.7$$

$$24 \quad 0.8(3.5h - 5) = 1.6$$