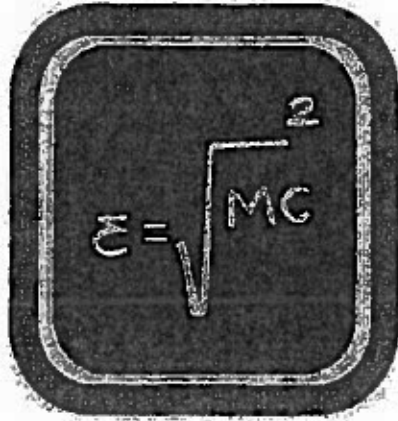


7<sup>th</sup> Grade Summer Advanced Math Packet



Your Summer Math Packet is attached. Please complete each page and show your work either on the page itself or attached on a clearly labeled piece of looseleaf. The packet must be returned to your math teacher on the first day of school in September.

You may use the following website as helpful guides:

[www.khanacademy.org](http://www.khanacademy.org)

[www.homeworkspot.com/middle/math](http://www.homeworkspot.com/middle/math)

[www.mathvids.com/level/show/3-middle-school-math](http://www.mathvids.com/level/show/3-middle-school-math)

# Divide Integers

Name \_\_\_\_\_

Date \_\_\_\_\_

Multiplication Sentence	Related Division Sentences	The quotient of two integers: • is <i>positive</i> if they have the <i>same</i> sign $+10 \div +2 = +5$ $-9 \div +3 = +3$ • is <i>negative</i> if they have <i>different</i> signs. $-10 \div +2 = -5$ $+9 \div -3 = -3$
$-5 \times +3 = -15$	$-15 \div +3 = -5$ $-15 \div -5 = +3$	
$+4 \times -5 = -20$	$-20 \div -5 = +4$ $-20 \div +4 = -5$	
$-5 \times -6 = +30$	$+30 \div -6 = -5$ $+30 \div +5 = +6$	

Complete each related division sentence.

1.  $-9 \times +3 = -27$

$-27 \div +3 = \underline{\hspace{2cm}}$

$-27 \div -9 = \underline{\hspace{2cm}}$

2.  $-8 \times -6 = +48$

$+48 \div -6 = \underline{\hspace{2cm}}$

$+48 \div -8 = \underline{\hspace{2cm}}$

3.  $+4 \times +6 = +24$

$+24 \div +6 = \underline{\hspace{2cm}}$

$+24 \div +4 = \underline{\hspace{2cm}}$

Write two related division sentences.

4.  $-7 \times +2 = -14$

\_\_\_\_\_

\_\_\_\_\_

5.  $+6 \times -2 = -12$

\_\_\_\_\_

\_\_\_\_\_

6.  $-9 \times -7 = +63$

\_\_\_\_\_

\_\_\_\_\_

7.  $+8 \times +9 = +72$

\_\_\_\_\_

\_\_\_\_\_

8.  $-7 \times -6 = +42$

\_\_\_\_\_

\_\_\_\_\_

9.  $+5 \times -9 = -45$

\_\_\_\_\_

\_\_\_\_\_

Divide.

10.  $+64 \div -8 = \underline{\hspace{2cm}}$

11.  $-90 \div -2 = \underline{\hspace{2cm}}$

12.  $+24 \div -8 = \underline{\hspace{2cm}}$

13.  $-56 \div -4 = \underline{\hspace{2cm}}$

14.  $-42 \div +6 = \underline{\hspace{2cm}}$

15.  $-12 \div -1 = \underline{\hspace{2cm}}$

16.  $0 \div -11 = \underline{\hspace{2cm}}$

17.  $-66 \div -11 = \underline{\hspace{2cm}}$

18.  $-72 \div -8 = \underline{\hspace{2cm}}$

19.  $+81 \div +9 = \underline{\hspace{2cm}}$

20.  $-39 \div -3 = \underline{\hspace{2cm}}$

21.  $-24 \div -4 = \underline{\hspace{2cm}}$

## Problem Solving

22. A scuba diver dives to a depth of 150 feet in 25 minutes. What is the average rate of the dive per minute, written as an integer?

\_\_\_\_\_

23. A water pump pumps out a basement filled with 45,000 gallons of water in 9 hours. What is the average amount per hour, written as an integer?

\_\_\_\_\_

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## Cumulative Test

Choose the best answer.

- A movie company is surveying students about their favorite type of movie. Which of the following is the population?
  - A all students who go to the movies
  - B teenagers waiting on line at the movie theater
  - C 100 names randomly selected from the phone book
  - D people leaving a movie theater

- The stem-and-leaf plot shows Mandy's math test scores. What is the mode of her test scores?

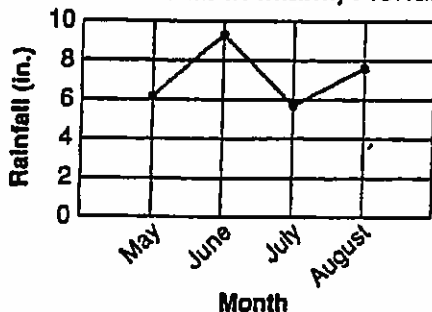
**Math Test Scores**

Stem	Leaves
7	8
8	0 3 4 4 6 9
9	1 5
10	0

- F 84
- G 85
- H 87
- J 88

- About how much more rain normally falls in June than in May in Miami, Florida?

**Normal Rainfall in Miami, Florida**



- A 0.5 in.
- B 1.4 in.
- C 2.5 in.
- D 3.3 in.

- Which is *not* equal to 256?
  - F  $2^8$
  - G  $4^4$
  - H  $8^3$
  - J  $16^2$

- Simplify  $(56 + 8 + 3) \cdot 2 - 1$ .
  - A 2
  - B 11
  - C 19
  - D 59

- What is the least common multiple of 6, 12, and 15?
  - F 2
  - G 28
  - H 60
  - J 120

- Combine like terms in the expression  $4a^2 + 5 + 3a^2$ .
  - A  $a^2 + 5$
  - B  $7a^2 + 5$
  - C  $6a^2$
  - D  $a + 5$

- Solve  $29 + p = 27$ .
  - F  $p = 2$
  - G  $p = 27$
  - H  $p = 37$
  - J  $p = 81$

- In which quadrant would you find the point  $(-5, -6)$ ?
  - A Quadrant I
  - B Quadrant II
  - C Quadrant III
  - D Quadrant IV

- Evaluate the expression  $x - y$  for  $x = -19$  and  $y = 6$ .
  - F -25
  - G -13
  - H 13
  - J 25

Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

CHAPTER  
12

## Cumulative Test

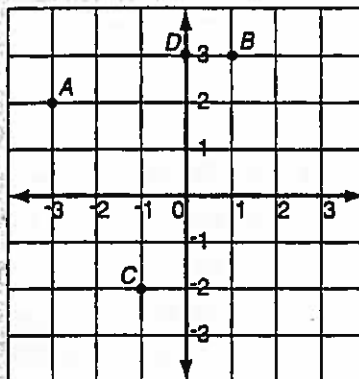
11. Solve  $-15d = 45$ .
- A  $d = -30$                       C  $d = 3$   
 B  $d = -3$                          D  $d = 30$
12. Which group of numbers is in order from greatest to least?
- F 0.2, 0.21,  $\frac{1}{4}$   
 G  $\frac{1}{4}$ , 0.2, 0.21  
 H 0.21, 0.2,  $\frac{1}{4}$   
 J  $\frac{1}{4}$ , 0.21, 0.2
13. A piece of rope is 5.4 meters long. Art cuts off a piece that is 2.59 meters long. How much of the rope is left?
- A 2.79 m                              C 3.21 m  
 B 2.81 m                              D 6.01 m
14. A spool of lanyard is 21 yards long. If it is cut into pieces that are each 1.75 yards long, how many pieces of lanyard will there be?
- F 4 pieces                              H 16 pieces  
 G 12 pieces                             J 25 pieces
15. What is the value of  $2\frac{5}{8} + \frac{7}{10}$ ?
- A  $\frac{1}{4}$                                       C  $1\frac{24}{25}$   
 B  $\frac{25}{49}$                                   D  $3\frac{3}{4}$
16. Subtract  $\frac{5}{6} - \frac{3}{8}$ . Give the answer in simplest form.
- F  $\frac{1}{7}$                                       H  $1\frac{1}{20}$   
 G  $\frac{11}{24}$                                   J  $1\frac{17}{24}$
17. Which pair of ratios is *not* proportional?
- A  $\frac{24}{27}$  and  $\frac{16}{18}$   
 B  $\frac{6}{10}$  and  $\frac{30}{45}$   
 C  $\frac{6}{15}$  and  $\frac{8}{20}$   
 D  $\frac{20}{24}$  and  $\frac{10}{12}$
18. A waffle recipe uses 3 cups of mix for 4 waffles. How much mix would you need to make 16 waffles?
- F 6 c                                      H 9 c  
 G 8 c                                      J 12 c
19. A large pot holds 24 quarts of water. How many gallons is this?
- A 3 gal                                    C 6 gal  
 B 4 gal                                    D 48 gal
20. Which statement is true?
- F  $\frac{3}{5} < 0.35$                           H  $\frac{1}{4} < 0.14$   
 G  $45\% < \frac{4}{5}$                           J  $\frac{3}{4} < 34\%$

# The Coordinate Plane

Name \_\_\_\_\_

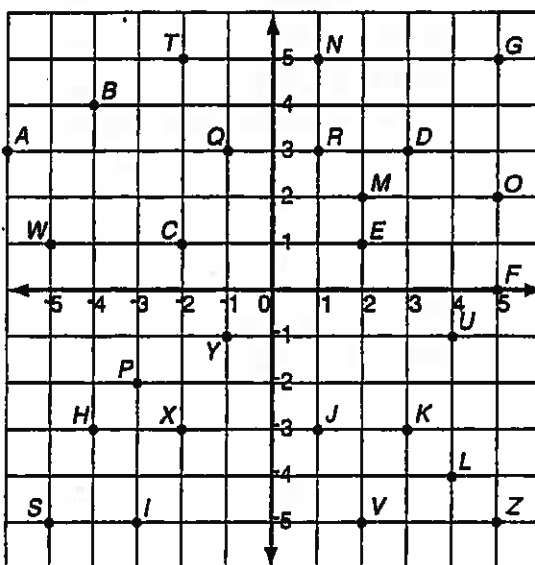
Date \_\_\_\_\_

Point A is located at  $(-3, 2)$ .  
 Point B is located at  $(1, 3)$ .  
 Point C is located at  $(-1, -2)$ .  
 Point D is located at  $(0, 3)$ .



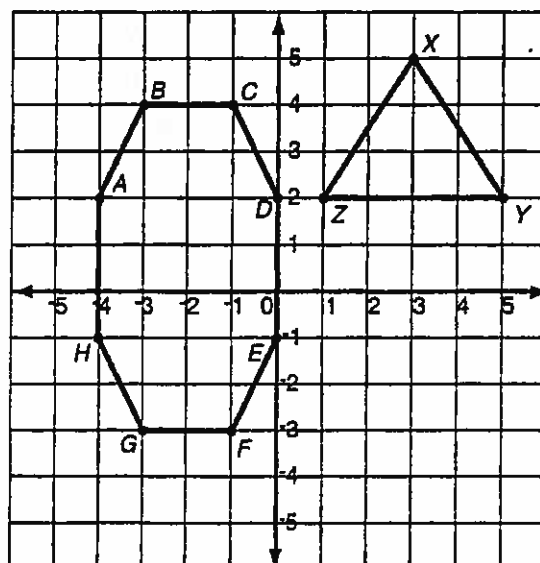
Use the grid on the right for exercises 1–12.  
 Name the point for each set of coordinates.

- |                     |                     |
|---------------------|---------------------|
| 1. $(-4, 4)$ _____  | 2. $(2, 1)$ _____   |
| 3. $(-4, -3)$ _____ | 4. $(3, -3)$ _____  |
| 5. $(1, 3)$ _____   | 6. $(2, 2)$ _____   |
| 7. $(-1, 3)$ _____  | 8. $(5, 0)$ _____   |
| 9. $(4, -4)$ _____  | 10. $(-2, 5)$ _____ |
| 11. $(-5, 1)$ _____ | 12. $(2, -5)$ _____ |



Use the grid on the right for exercises 13–21.  
 Name the point to complete the chart.

	Point	Coordinates
13.		$(-4, 2)$
14.		$(-3, 4)$
15.		$(-1, 4)$
16.		$(0, -1)$
17.		$(-3, -3)$
18.		$(-4, -1)$
19.		$(3, 5)$
20.		$(5, 2)$
21.		$(1, 2)$



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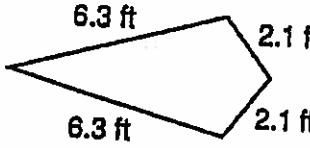
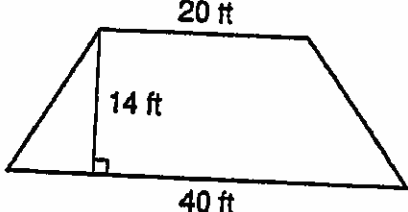
Name \_\_\_\_\_

Date \_\_\_\_\_

Class \_\_\_\_\_

CHAPTER  
12

## Cumulative Test

21. A flower shop ordered 200 flowers. If 28% of the flowers were white, how many white flowers were ordered?  
 A 28 flowers      C 140 flowers  
 B 56 flowers      D 280 flowers
22. In a survey, 10% of the people said they live in a city. If 60 people said they live in a city, how many people were surveyed?  
 F 15 people      H 240 people  
 G 25 people      J 600 people
23. Dana wants to invest \$3,000 at 5% simple interest. How many years will it take for the total amount in her account to reach \$6,000?  
 A 5 yr      C 15 yr  
 B 10 yr      D 20 yr
24. What geometric figure extends indefinitely in one direction?  
 F point      H line segment  
 G ray      J line
25. The measures of the angles of a triangle are  $40^\circ$ ,  $80^\circ$ , and  $60^\circ$ . What type of triangle is it?  
 A acute      C obtuse  
 B equilateral      D right
26. What is the sum of the interior angles of a triangle?  
 F  $360^\circ$       H  $90^\circ$   
 G  $180^\circ$       J  $45^\circ$
27. Which of the following always has rotational symmetry?  
 A square  
 B trapezoid  
 C rhombus  
 D parallelogram
28. How many feet are in 6 miles?  
 F 2,640 ft      H 10,560 ft  
 G 3,520 ft      J 31,680 ft
29. Find the perimeter of the polygon.
- 
- A 8.2 ft      C 16.8 ft  
 B 12.5 ft      D 25 ft
30. What is the area of the trapezoid?
- 
- F  $216 \text{ ft}^2$       H  $420 \text{ ft}^2$   
 G  $318 \text{ ft}^2$       J  $636 \text{ ft}^2$
31. Find the missing length in a right triangle if one leg is 12 meters and the hypotenuse is 15 meters.  
 A 3 m      C 19 m  
 B 9 m      D 27 m

# Function Tables

Name \_\_\_\_\_

Date \_\_\_\_\_

Let  $m = 1$  month. Let  $\frac{m}{12} =$  number of years.

$m$	5	11	12	36	60
$\frac{m}{12}$	$\frac{5}{12}$	$\frac{11}{12}$	$\frac{12}{12} = 1$	$\frac{36}{12} = 3$	$\frac{60}{12} = 5$

Use the rule to complete each function table.

1. Let  $s =$  weight of fruit in pounds. Let  $s + 4 =$  weight of fruit plus weight of box.

$s$	12	29	35	51	68
$s + 4$					

2. Let  $z =$  number of books. Let  $\$7z =$  total cost.

$z$	1	3	5	7	9
$\$7z$					

3. Let  $b =$  perimeter of garden. Let  $\frac{b}{4} =$  length of one side of garden.

$b$	16	40	52	64	100
$\frac{b}{4}$					

Write the rule for each function table.

4.

$a$	?
3	12
5	20
8	32
12	48

5.

$r$	?
2	15
4	17
7	20
9	22

6.

$f$	?
75	15
40	8
15	3
5	1

# Function and Coordinate Graphs

Name \_\_\_\_\_

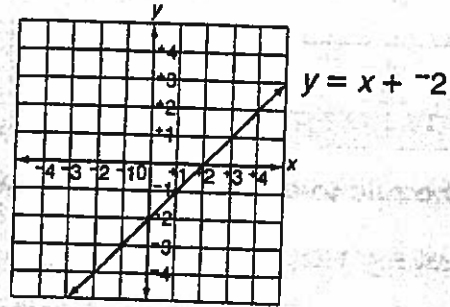
Date \_\_\_\_\_

Graph the function  $y = x + -2$  on a coordinate plane.

• Make a function table.

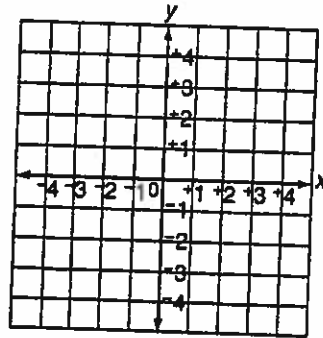
• Graph each ordered pair. Connect the points.

$x$	$y = x + -2$	$y$	$(x, y)$
-1	$y = -1 + -2$	-3	$(-1, -3)$
0	$y = 0 + -2$	-2	$(0, -2)$
+1	$y = +1 + -2$	-1	$(+1, -1)$



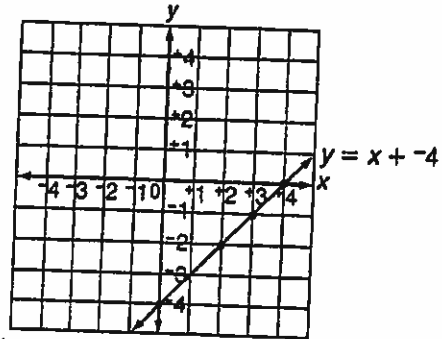
1. Complete the function table. Then graph on the coordinate plane.

$x$	$y = x + -1$	$y$	$(x, y)$
-1			
0			
+2			



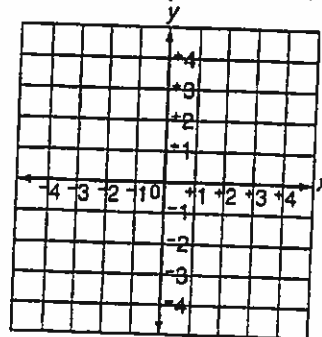
Use the given graph of  $y = x + -4$ .

- When  $x = 0$ , what is the value of  $y$ ? \_\_\_\_\_
- When  $x = +2$ , what is the value of  $y$ ? \_\_\_\_\_
- For what value of  $x$  is  $y = -1$ ? \_\_\_\_\_
- For what value of  $x$  is  $y = 0$ ? \_\_\_\_\_



## Problem Solving

6. A meteorologist discovered that a storm is following a path on her map made by the equation  $y = x + -3$ . Will the storm pass through the point  $(+2, 0)$ ? Make a function table. Then graph on a coordinate plane to answer.

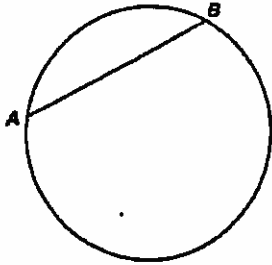



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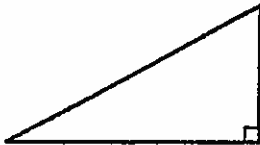
## End of Course Test

25. What is another name for segment AB?



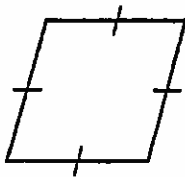
- A radius                      C sector  
B arc                              D chord

26. Identify the type of triangle.



- F obtuse                      H equilateral  
G right                        J acute

27. Identify the type of quadrilateral.



- A square                      C rectangle  
B trapezoid                  D rhombus

28. Convert 4.5 meters to centimeters.

- F 450 cm                      H 0.45 cm  
G 45 cm                        J 0.045 cm

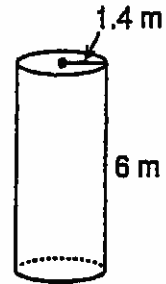
29. Find the area of a triangle with base 10 centimeters and height 8.5 centimeters.

- A  $85 \text{ cm}^2$                       C  $37 \text{ cm}^2$   
B  $42.5 \text{ cm}^2$                     D  $18.5 \text{ cm}^2$

30. The two legs of a right triangle measure 5 feet and 12 feet. How long is the hypotenuse?

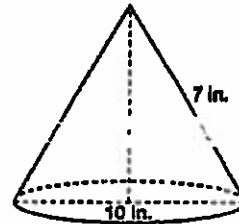
- F 4.1 ft                      H 13 ft  
G 10.9 ft                      J 17 ft

31. Find the volume of the cylinder to the nearest tenth. Use 3.14 for  $\pi$ .



- A  $12.3 \text{ m}^3$   
B  $26.4 \text{ m}^3$   
C  $36.9 \text{ m}^3$   
D  $158.3 \text{ m}^3$

32. Find the surface area. Use 3.14 for  $\pi$ .



- F  $183.16 \text{ in}^2$                       H  $533.8 \text{ in}^2$   
G  $188.4 \text{ in}^2$                       J  $732.6 \text{ in}^2$

33. The volume of a cylinder is 88 cubic inches. A smaller container, similar in shape, has a scale factor of  $\frac{1}{2}$ .

What is the volume of the smaller container?

- A  $11 \text{ in}^3$                       C  $176 \text{ in}^3$   
B  $44 \text{ in}^3$                       D  $704 \text{ in}^3$

34. Helen has four jogging outfits and three pairs of shoes. How many different outfits can she make?

- F 1 outfit                      H 10 outfits  
G 7 outfits                      J 12 outfits

### End of Course Test

35. In how many different ways can a committee of 4 students be chosen from 6 students?

- A 120 ways                      C 15 ways  
 B 30 ways                        D 1 way

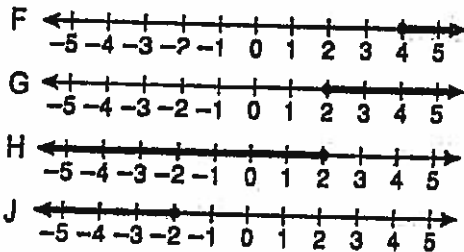
36. Kia's experimental probability of striking out at baseball is 13%. Out of 30 times at bat, about how many times will she strike out?

- F 4                                      H 12  
 G 9                                      J 18

37. Solve  $4w = 2w - 12$ .

- A  $w = -6$                           C  $w = 2$   
 B  $w = -2$                          D  $w = 6$

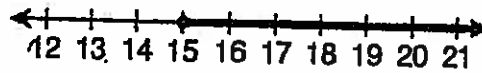
38. Which is the graph of the solution set of  $n - 3 \geq -1$ .



39. Solve  $-2n + 5 > 7$ .

- A  $n > 1$                               C  $n > -1$   
 B  $n < 1$                               D  $n < -1$

40. Which inequality has the following graphed solution?



- F  $45 > 3y$                           H  $3y < 45$   
 G  $3y \leq 45$                          J  $45 \leq 3y$