

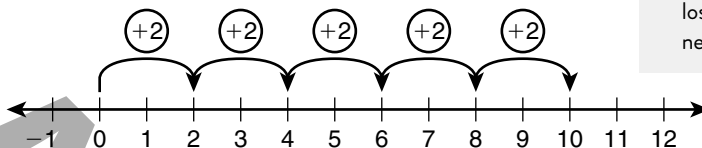
Multiply and Divide Integers

- 6.3(C) Represent integer operations with concrete models and connect the actions with the models to standardized algorithms.
- 6.3(D) Add, subtract, multiply, and divide integers fluently.

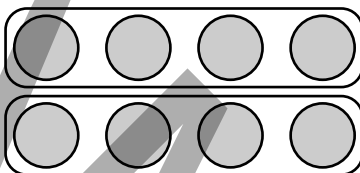
Understand the TEKS

An **integer** is a **real number** that is not a fraction. An integer can be positive, negative, or zero. You can use models such as counters and number lines to represent multiplication and division with integers.

Example: $5 \times 2 = 10$



Example: $-8 \div 2 = -4$



Did You Know?

MATH CONCEPTS

To represent a gain or increase, use a positive number. To represent a loss or decrease, use a negative number.

Multiply and divide integers just as you would whole numbers. The table shows the rules for finding the sign of the product or quotient.

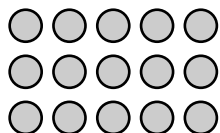
Rule	Examples
If the signs are alike, the product or quotient is positive.	$-3 \times -6 = 18$ $36 \div 6 = 6$
If the signs are not alike, the product or quotient is negative.	$-4 \times 5 = -20$ $-24 \div 8 = -3$

Juan's bank statement shows a charge of \$15 total for five transactions. The fee is the same for each transaction. What was the charge for each transaction?

Step 1 Use a number line or counters to model the problem.

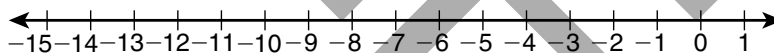
Think: A charge is an amount owed and can be represented by a negative number.

One way



Use grey counters to represent -15 . Divide the counters into five equal groups. How many are there in each group? The value of the counters in each group is _____.

Another way



Start at 0 and make five equal jumps. Finish the jumps at -15 . How many segments of the number line are in each group? In what direction did the jumps move? There are _____ segments in each group. The jumps moved _____.

Step 2 Write an equation to represent the division problem.

$-15 \div 5 = \underline{\hspace{2cm}}$

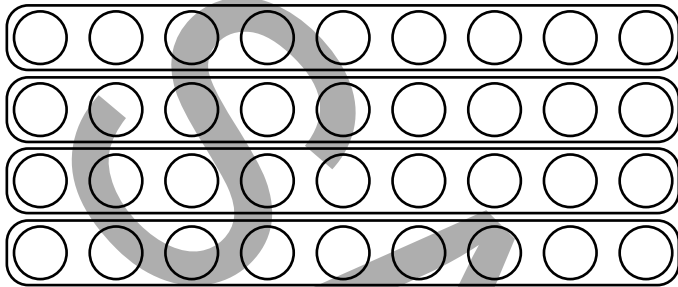
So Juan was charged _____ for each transaction.



★ Practice

DIRECTIONS Read each question. Then circle the letter for the correct answer.

1 The counters can be used to model a real-world division problem.



Which situation could the model represent?

- A** A bank account growing \$36 over four weeks of saving
- B** A bank account losing \$36 over four weeks of spending
- C** A bank account growing \$4 a week for nine weeks
- D** A bank account losing \$4 a week for nine weeks

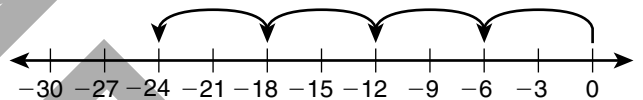
2 Cheri is hiking a trail from a peak that is 3,200 feet above sea level to a canyon that is 400 feet below sea level. It takes her from 7 A.M. to 11 A.M. to complete the trail. What is her average change in elevation per hour?

- F** -1,200 feet
- G** -900 feet
- H** -800 feet
- J** -700 feet

3 A real estate agent drops the price of a property for sale by \$2,300 each month for a total of six months. The price of the property now is \$125,000. What was the price of the property six months ago?

- A** \$138,800
- B** \$127,300
- C** \$122,700
- D** \$111,200

4 Leena modeled a problem on a number line, as shown below.



Which problem could the number line represent?

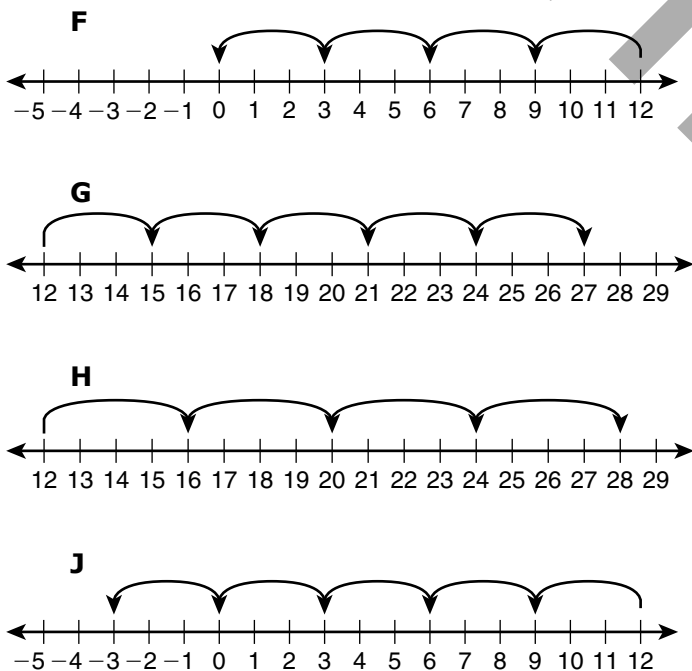
- F** $-3 \times 8 = -24$
- G** $2 \times -12 = -24$
- H** $-1 \times 24 = -24$
- J** $-6 \times 4 = -24$

5 At the end of the year, an insurance company assessed the value of a warehouse inventory at \$53,800. The warehouse owner calculated that the value of the inventory had increased, on average, \$5,325 a year for the past five years. What was the value of the inventory five years ago?

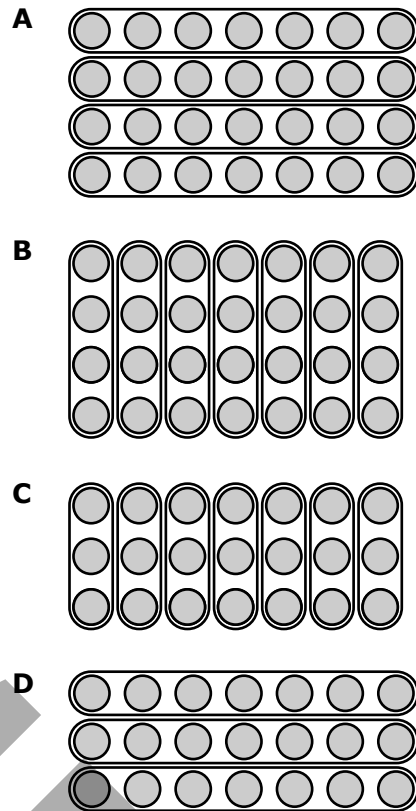
- A** \$27,175
- B** \$48,475
- C** \$59,124
- D** \$80,425

6 During a manufacturer’s experiment, the temperature of a freezer was lowered three degrees every minute for five minutes. The temperature of the freezer started at 12°F.

Which number line correctly models the situation?



7 Maria modeled the problem $-28 \div 7 = -4$. Which is Maria’s model?



8 A hot air balloon is at an altitude of 5,000 feet. It descends at a rate of 150 feet per minute. In feet, what is the altitude of the hot air balloon after 12 minutes?

Record your answer and fill in the bubbles on the following grid. Be sure to use the correct place value.

					.		
+	0	0	0	0		0	0
-	1	1	1	1		1	1
	2	2	2	2		2	2
	3	3	3	3		3	3
	4	4	4	4		4	4
	5	5	5	5		5	5
	6	6	6	6		6	6
	7	7	7	7		7	7
	8	8	8	8		8	8
	9	9	9	9		9	9