

NAME _____

Module 3 Integers
Lesson 5 Solving Problems with Integers

Independent Practice

3.5

Solve each problem.

1. A certain crane ascends at a rate of nine units per minute and descends at a rate of six units per minute. If the crane starts at a position of zero units, ascends for two minutes, and descends for six minutes, where is the crane in relation to the starting position?
18 units below the starting position
2. Water is draining out of a pond at a rate of 85 gallons per hour. Currently, the pond has 16,000 gallons of water. How many gallons of water did the pond have five hours ago?
16,425 gallons
3. Radioactive uranium decays in a controlled reactor at a rate of 150 atoms per month. If there are 900 atoms on the first day of June, how many atoms are there on the first day of October?
300 atoms
4. Sarah types 1,400 words for a research paper by 10:20 A.M. If she types at a rate of 45 words per minute, how many words had she typed by 10 A.M.?
500 words
5. Coffee drains out of a large coffee pot at a rate of three cups per minute. If there are three cups left in the pot, how many cups were in the pot eight minutes ago?
27 cups
6. A kite is released 35 units below the position marked as zero units. If the kite ascends at a rate of seven units per second, how many seconds will it take the kite to reach zero units?
5 seconds

Journal

1. An object ascends at a rate of 15 units per minute and descends at a rate of 12 units per minute. Write and solve a word problem where the object ends up higher than it began.
2. A pool contains 56 gallons of water. Write six different rates (gallons per hour) to empty the pool or to cause there to be zero gallons of water left in the pool. For each of your six answers, write the corresponding multiplication problem.
3. Write eight different multiplication number sentences that equal 28.

Cumulative Review

Find the absolute value.

1. $|12|$
12

2. $|-22|$
22

Order the numbers from least to greatest.

3. $-5, 2, -3, -6, -1$
 $-6, -5, -3, -1, 2$

4. $1, -2, 0, -1, 2, 3, -5$
 $-5, -2, -1, 0, 1, 2, 3$

Add.

5. $-4 + (-7)$
 -11

6. $20 + (-6)$
14

Subtract.

7. $-2 - (-9)$
7

8. $-8 - 2$
 -10

Multiply.

9. -4×9
 -36

10. -5×-7
35

Divide.

11. $-18 \div 3$
 -6

12. $-63 \div (-7)$
9

Possible Journal Answers

1. An object ascends at a rate of 15 units per minute and descends at a rate of 12 units per minute. The object begins at a position of zero units and ascends for 12 minutes. If it then descends for three minutes, where does it end up?
 $0 + (15)(12) + (-12)(3) = 144$ The object ends up 144 units from its starting point.
2. • eight gallons per hour for seven hours, $(-8)(7) = -56$
• seven gallons per hour for eight hours, $(-7)(8) = -56$
• four gallons of water per hour for 14 hours, $(-4)(14) = -56$
• four gallons of water per hour for four hours, $(-14)(4) = -56$
• two gallons of water per hour for 28 hours, $(-2)(28) = -56$
• 28 gallons per hour for two hours, $(-28)(2) = -56$
3. $7 \times 4 = 28$ $2 \times 14 = 28$
 $4 \times 7 = 28$ $14 \times 2 = 28$
 $-4 \times -7 = 28$ $14 \times -2 = 28$
 $-7 \times -4 = 28$ $-2 \times -14 = 28$

