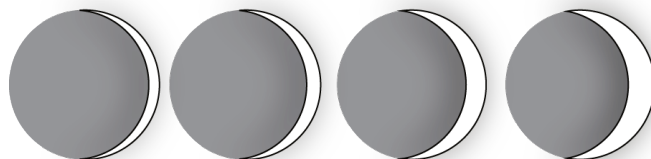


## Lesson 9 Practice Problems



1. On the first day after the new moon, 2% of the Moon's surface is illuminated. On the second day, 6% is illuminated.
  - a. Based on this information, predict the day on which the Moon's surface is 50% illuminated and 100% illuminated.
  - b. The Moon's surface is 100% illuminated on day 14. Does this agree with the prediction you made?
  - c. Is the percentage illumination of the Moon's surface a linear function of the day?

2. In science class, Jada uses a graduated cylinder with water in it to measure the volume of some marbles. After dropping in 4 marbles so they are all under water, the water in the cylinder is at a height of 10 milliliters. After dropping in 6 marbles so they are all under water, the water in the cylinder is at a height of 11 milliliters.

- a. What is the volume of 1 marble?
- b. How much water was in the cylinder before any marbles were dropped in?
- c. What should be the height of the water after 13 marbles are dropped in?
- d. Is the relationship between volume of water and number of marbles a linear relationship? If so, what does the slope of a line representing this relationship mean? If not, explain your reasoning.

3. Solve each of these equations. Explain or show your reasoning.

$$2(3x + 2) = 2x + 28$$

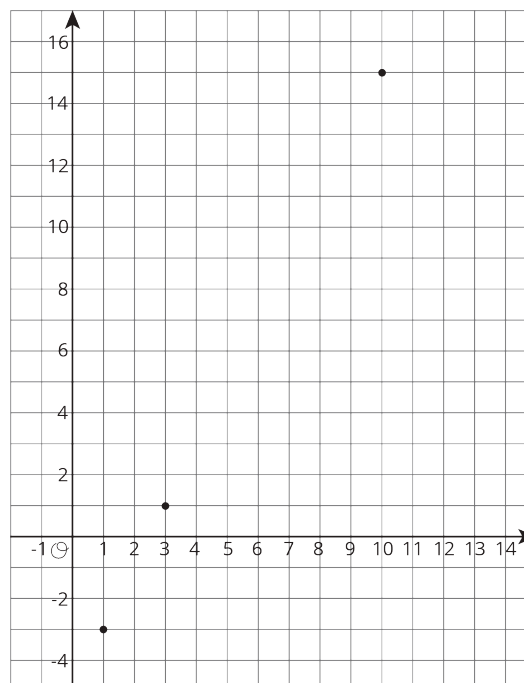
$$5y + 13 = -43 - 3y$$

$$4(2a + 2) = 8(2 - 3a)$$

(From Unit 4, Lesson 5.)

4. For a certain city, the high temperatures (in degrees Celsius) are plotted against the number of days after the new year.

Based on this information, is the high temperature in this city a linear function of the number of days after the new year?



5. The school designed their vegetable garden to have a perimeter of 32 feet with the length measuring two feet more than twice the width.

a. Using  $\ell$  to represent the length of the garden and  $w$  to represent its width, write and solve a system of equations that describes this situation.

b. What are the dimensions of the garden?

(From Unit 4, Lesson 15.)