These problems are very similar to actual SAT test questions. Use a calculator whenever you need one. On multiple choice questions, choose the best answer from the ones provided. When a picture has a diagram, assume the diagram is drawn accurately except when a problem says it is not. These questions address more topics than you have done in class so far.

1. If \( x + 9 \) is an even integer, then which of the following could be the value of \( x \)?
   a. 4  b. 2  c. 0  d. –1  e. –2

2. If \( (m + 5)(11 – 7) = 24 \), then \( m = \)?
   a. 1  b. 4  c. 8  d. 11  e. 17

3. The fractions \( \frac{3}{d} \), \( \frac{4}{d} \), and \( \frac{5}{d} \) are in simplest reduced form. Which of the following could be the value of \( d \)?
   a. 20  b. 21  c. 22  d. 23  e. 24

4. A group of three numbers is called a “\( j \)-triple” for some number \( j \), if \( \left( \frac{3}{4}, j, \frac{5}{4}, j \right) \). Which of the following is a \( j \)-triple?
   a. \( (0, 4, 5) \)  b. \( \left( \frac{3}{4}, 6, 6 \frac{1}{4} \right) \)  c. \( (6, 2, 10) \)
   d. \( (750, 1000, 1250) \)  e. \( (575, 600, 625) \)

5. A ball is thrown straight up. The height of the ball can be modeled with the equation \( h = 38t – 16t^2 \) where \( h \) is the height in feet and \( t \) is the number of second since the ball was thrown. How high is the ball two seconds after it is thrown?
   a. 12  b. 16  c. 22  d. 32  e. 40

6. In the figure at right, \( \overline{AC} \) is a line segment with a length of 4 units. What is the value of \( k \)?

7. Let the operation \( \$ \) be defined as \( a \$ b \) is the sum of all integers between \( a \) and \( b \). For example, \( 4 \$ 10 = 5 + 6 + 7 + 8 + 9 = 35 \). What is the value of \( (130 \$ 170) – (131 \$ 169) \)?
8. An isosceles triangle has a base of length 15. The length of each the other two equal sides is an integer. What is the shortest possible length of these other two sides?

9. Assume that $\frac{1}{4}$ quart of cranberry concentrate is mixed with $1\frac{3}{4}$ quarts of apple juice to make cranapple juice for four people. How many quarts of cranberry concentrate are needed to make a cranapple drink at the same strength for 15 people?

10. A stack of five cards is labeled with a different integer ranging from 0 to 4. If two cards are selected at random without replacement, what is the probability that the sum will be 2?

Answers

6. $\frac{1}{2}$  7. 300  8. 8  9. $\frac{15}{16}$  10. $\frac{1}{10}$