

1. The diameter of a circle is a whole number. The area of the circle is between 100 and 120 square units. What is the number of units in the circle's diameter?

1. \_\_\_\_\_

2. A merchant gives a 20% discount on a coat, followed by a 30% discount, followed by a 10% discount. Each new discount is applied to the price of the coat after the previous discount. What single percent discount is equivalent to these three successive discounts? Express your answer as a decimal to the nearest tenth.

2. \_\_\_\_\_

3. Colette had a doll collection. She gave half of her dolls to her niece. She then gave away one-fourth of the remaining dolls to her sister, leaving her with only 24 dolls. How many dolls did she have in her original collection?

3. \_\_\_\_\_

4. A friendship candle burns wax at a rate of  $10 \text{ mm}^3/\text{min}$ . What is the number of cubic centimeters in the volume of a candle that will burn for exactly one week? Round your answer to the nearest whole number.

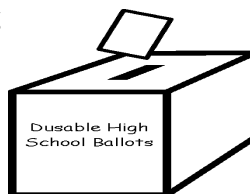
4. \_\_\_\_\_

5. Two standard six-faced dice are rolled. Jean wins if the product of the two numbers rolled is odd or a multiple of three, otherwise Allen wins. What is the probability that Jean wins? Express your answer as a common fraction.

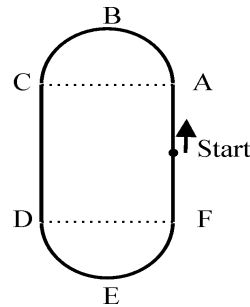
5. \_\_\_\_\_

6. On the student government ballot at Dusable High School, the six candidates for president are listed first, followed by the four candidates for vice president, followed by the five candidates for secretary and ending with the three candidates for treasurer. In how many ways can the candidates be listed on the ballot?

6. \_\_\_\_\_



7. A field consists of a rectangle,  $ACDF$ , and a semicircle at each end of the rectangle.  $AF = 84$  meters and  $AC = 60$  meters. Starting at the midpoint of  $AF$ , a sprinter runs along the edge of the field in the direction shown. When he gets to  $F$ , what percent of one lap has he finished? Express your answer to the nearest whole number.



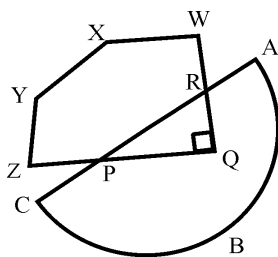
7. \_\_\_\_\_

8. Given:  $-12 \leq x \leq 20$  and  $-70 \leq y \leq -10$ . Let  $A$  equal the greatest possible value of  $x - y$ . Let  $B$  equal the least possible value of  $x + y$ . What is the value of  $A - B$ ?

8. \_\_\_\_\_

9. The area of pentagonal region  $QWXYZ$  is 50 square inches. The area of semicircular region  $ABC$  is 80 square inches.  $PQ = 7$  inches and  $QR = 6$  inches. How many square inches are in the union of the pentagonal and the semicircular regions?

9. \_\_\_\_\_



10. In the hexagonal grid, you may step from your current hexagon to any adjacent hexagon. How many 5-step paths are there from  $A$  to  $B$ ?

10. \_\_\_\_\_

