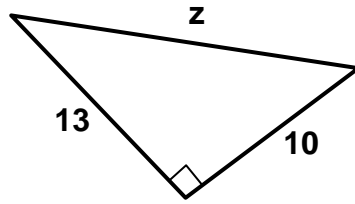


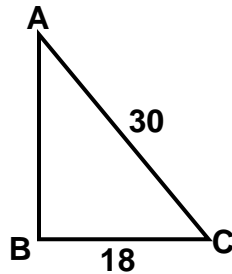
# LESSON 3 PRACTICE PROBLEMS



*You have 85 minutes  
to do 56 problems.*

1) The side  $z$  is between which two integers?

- a) 14 and 15      b) 15 and 16      c) 16 and 17  
d) 17 and 18      e) 18 and 19

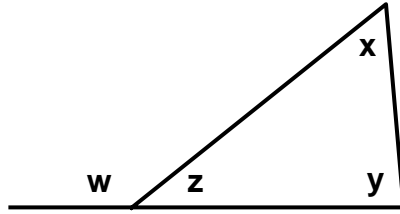


2) What is the length of  $AB$  in the right triangle above?

- a) 20      b) 24      c) 25      d) 28      e) 29

3) A rectangular box has a base that is a rectangle with width 5 in. and length 10 in. If the volume of the box is 975 cubic inches, what is the height of the box?

- a) 9.5      b) 14.5      c) 19.5      d) 65      e) 48,750



4) Given the triangle above, what is the value of  $x + y$ ?

- a)  $w$       b)  $z$       c)  $z + w$       d)  $z - y$       e)  $x - z$

5) A company has 16 million dollars in total expenses for one year. A circle graph shows a sector of 270 degrees representing employee salaries. How much was spent on employee salaries?

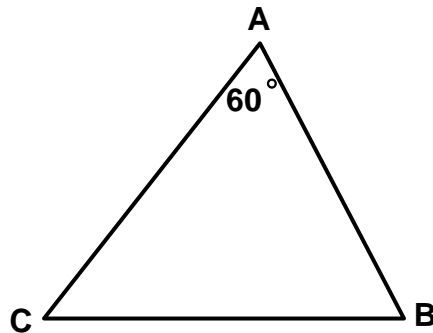
- a) 10 million      b) 11 million      c) 12 million  
d) 13 million      e) 14 million

6) Taylor rips a 9 in. by 12 in. magazine page neatly in half, forming two congruent pieces. What shape could these pieces be? Choose all that apply.

- a) Rectangle  
 b) Rhombus  
 c) Square  
 d) Trapezoid  
 e) Triangle

7) If the area of a trapezoid is 48, and the bases are 10 and 6, find the height of the trapezoid.

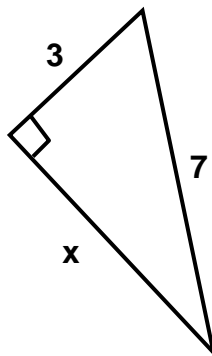
- a) 2      b) 4      c) 6      d) 8      e) 10



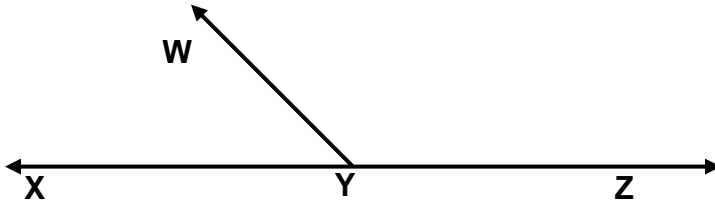
8) In triangle ABC, the measure of angle A is 60 degrees. If the measure of angle B is two times that of Angle C, we can conclude that:

- a) It is a right triangle.  
b) There is one obtuse angle.  
c) All of the angles measure 60 degrees.  
d) All of the angles are less than 90 degrees.  
e) All of the angles are more than 90 degrees.

9) Solve for x:



- a)  $\sqrt{58}$       b)  $\sqrt{40}$       c)  $\sqrt{38}$       d)  $\sqrt{28}$       e)  $\sqrt{20}$

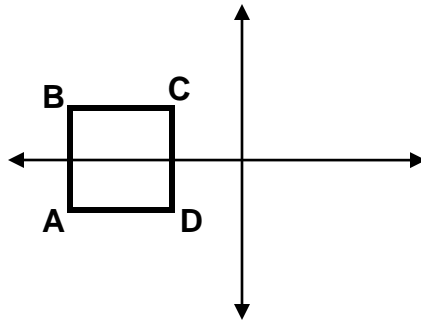


10) The measure of angle  $XYW$  is 48 degrees. What is the measure of angle  $WYZ$ ?

- a) 132      b) 123      c) 112      d) 102      e) 42

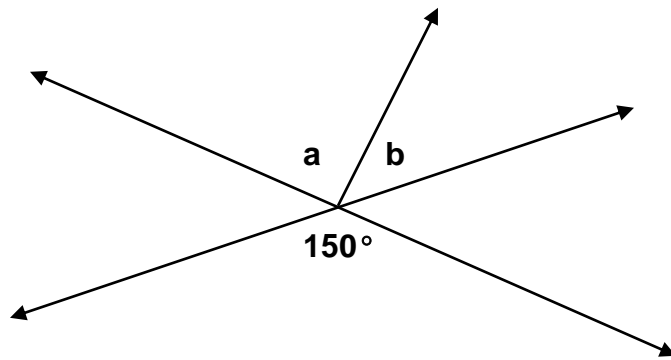
11) How many 8 inch square tiles will it take to cover a rectangular kitchen floor that is 8 feet wide and 10 feet long?

- a) 1440      b) 1000      c) 280      d) 180      e) 160



12) Square  $ABCD$ , above, has coordinates:  $C(-2, 2)$  and  $D(-2, -2)$ . If the square is shifted to the right 5 and down 6, what will be the coordinates of point  $B$ ?

- a)  $(2, -2)$       b)  $(-1, -4)$       c)  $(1, -4)$       d)  $(-2, -2)$       e)  $(-1, 4)$



13) Which shows the correct possible values of  $a$  and  $b$  in the diagram above?  
Choose all that apply.

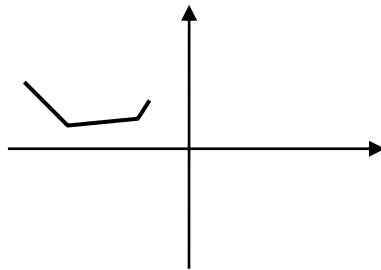
a) 20 & 130

b) 60 & 70

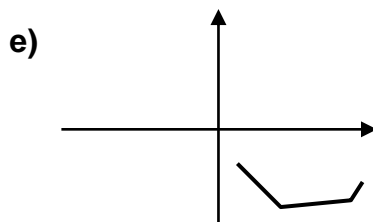
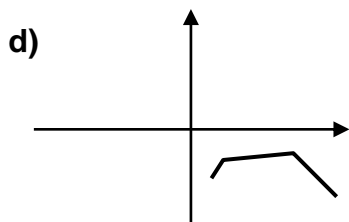
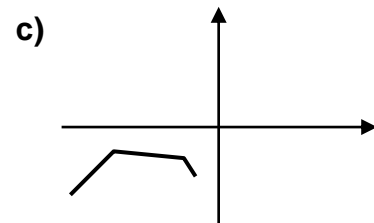
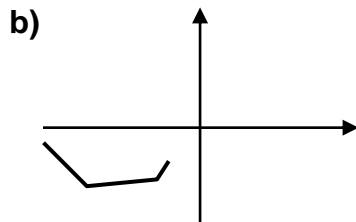
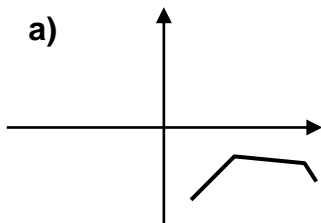
c) 80 & 70

d) 75 & 70

e) 75 & 75

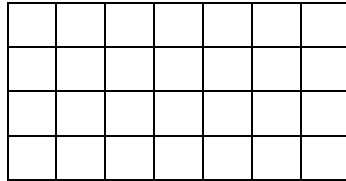


14) Which shows the reflection over the  $x$ -axis followed by a reflection over the  $y$ -axis of the figure above?



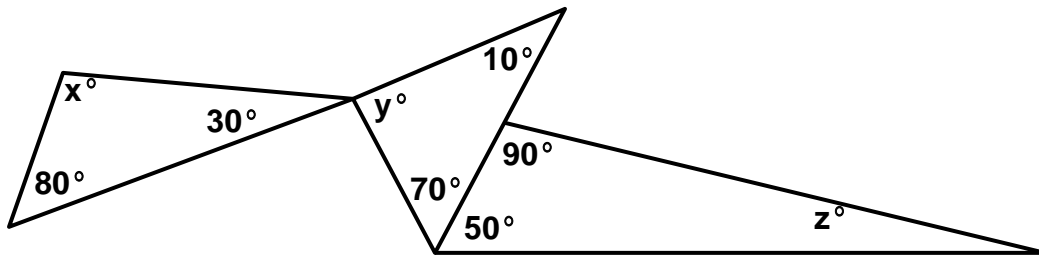
15) An acute angle of a right triangle is 35 degrees. What is the measure of the other acute angle?

- a) 45      b) 55      c) 65      d) 75      e) 90



16) The grid shown above has an area of 252. What is the length of the side of one of the squares?

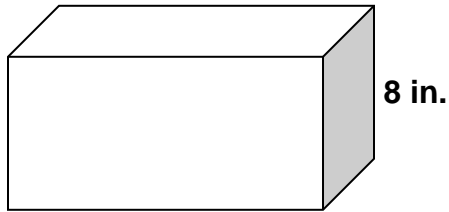
- a) 24      b) 9      c) 3      d) 1      e) .5



17) What is the value of  $x + y + z$  in the picture above?

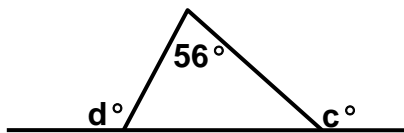
- a) 220      b) 210      c) 200      d) 180      e) 160

18)

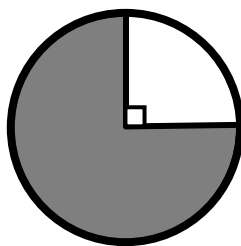


If the area of the top of this box is 40 square inches and the height of the box is 8 inches, which of the following would be a correct conclusion?

- a) The volume of the box is 48 cubic inches.
- b) The volume of the box is 96 cubic inches.
- c) The volume of the box is 320 cubic inches.
- d) The volume of the box is 2560 cubic inches.
- e) The volume of the box cannot be determined.



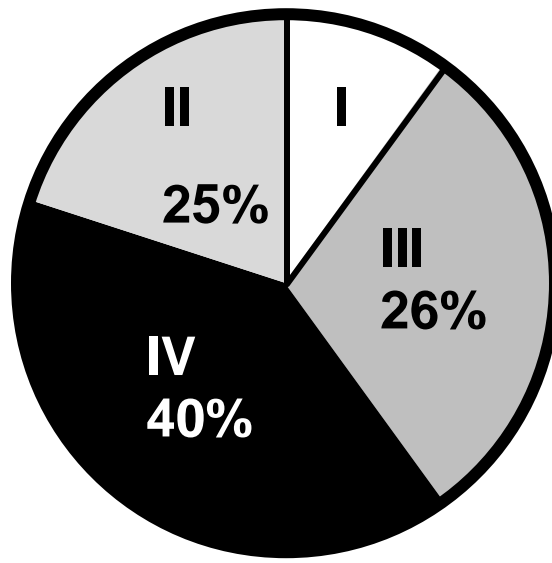
19) In the diagram above, if  $c = 123$  degrees, what is  $d$ ?



20) If the radius of the circle above is 12, what is the area of the shaded region?

- a)  $36\pi$
- b)  $108\pi$
- c)  $144\pi$
- d)  $300\pi$
- e)  $324\pi$

### Sales by Quarter



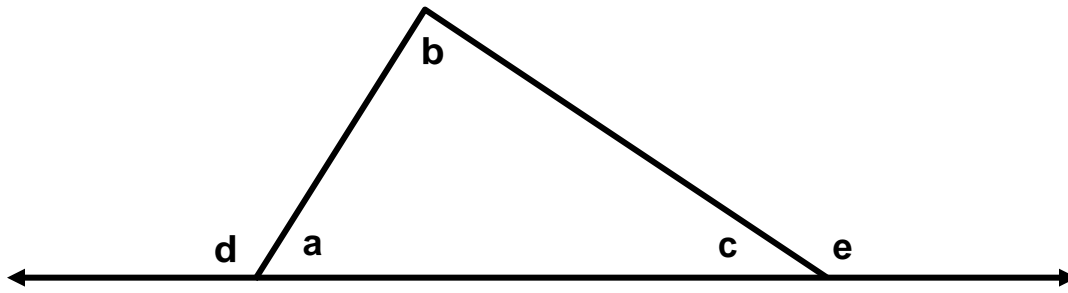
21) The circle graph above represents the sales by quarter of a company. If the company sales for the year were 2.6 million dollars, how much did they make in sales in the 1<sup>st</sup> quarter?

- a) \$23,400    b) \$26,000    c) \$234,000    d) \$260,000    e) \$270,000

22) A tire on a monster truck has a diameter of 40 inches. A tire on a bike has a diameter of 12 inches. Approximately, how many revolutions will the bike tire have to make to catch up with the monster truck after the truck has driven for 100 revolutions?

- a) 540    b) 465    c) 126    d) 333    e) 12560

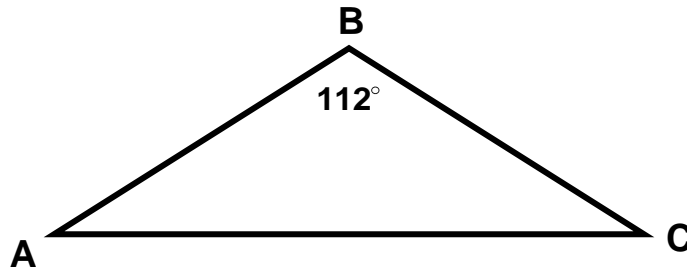




23) Which of the following is not true based on the drawing above?

- a)  $d = b + c$    b)  $a = 180 - d$    c)  $a + b + c = 180$    d)  $d = 180 - c$    e)  $e = a + b$

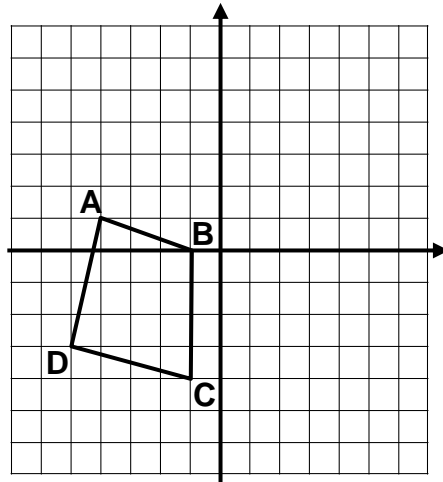
24) In triangle ABC,  $AB = BC$  and angle B =  $112^\circ$ . What is the value of Angle A?



- a) 68   b) 34   c) 17   d) 15   e) 12

25) If the diagonal of a square is 20, what would be one of the sides?

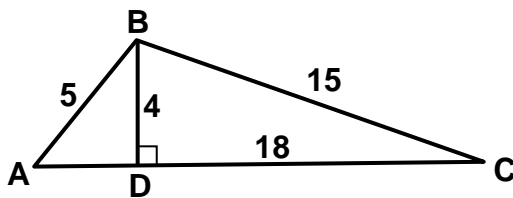
- a) 5   b) 10   c)  $10\sqrt{2}$    d) 20   e)  $20\sqrt{2}$

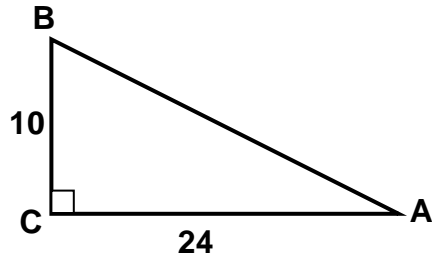


26) If a translation of 2 units right and  $k$  unit up moves point A to  $(-2, 6)$ , what will be the new coordinates of B after the same translation?

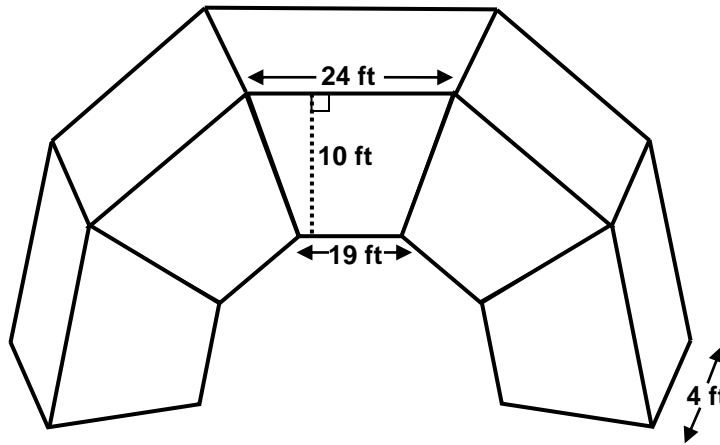
- a)  $(2, 6)$     b)  $(1, 5)$     c)  $(1, 1)$     d)  $(-3, 2)$     e)  $(1, 6)$

27) What is the area of triangle ABC shown below?





- 28) Which of the following statements is true about right triangle  $ABC$  above?
- a) The measure of angle  $B$  is  $30^\circ$ .
  - b) The sum of the measures of angle  $A$  and angle  $B$  is  $80^\circ$ .
  - c) The area of the triangle is 240.
  - d) The length of side  $AB$  is 25.
  - e) The perimeter of the triangle is 60.

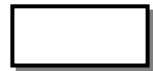
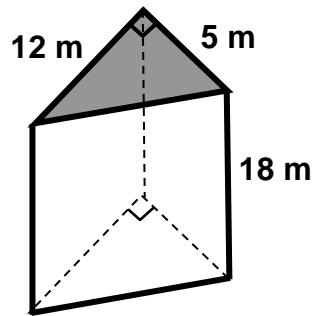


- 29) The arch above is constructed of 5 nearly congruent stones, each of which is in the shape of a right prism with trapezoid bases. Based on the approximate measurements provided, which of the following best approximates the volume of the entire arch?

The area of a trapezoid with bases  $b_1$  and  $b_2$  and height  $h$  is  $\frac{1}{2}(b_1 + b_2)h$ .

- a) 215 cu. ft.
- b) 860 cu. ft.
- c) 2,400 cu. ft.
- d) 3,560 cu. ft.
- e) 4,300 cu. ft.

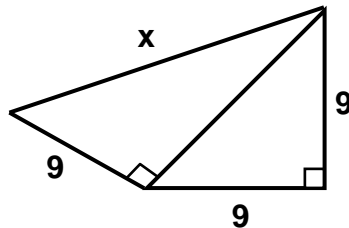
- 30) Find the volume of the triangular prism below. The volume of a prism is  $V = Bh$  where  $B$  represents the area of the base.



- 31) The volume of a box is 720 cubic feet. The height is 10 feet, and the width is 8 feet. What is the length of the box?

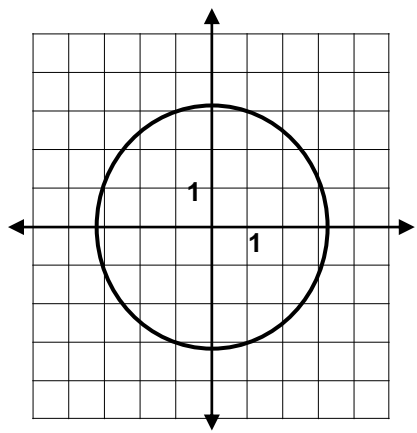
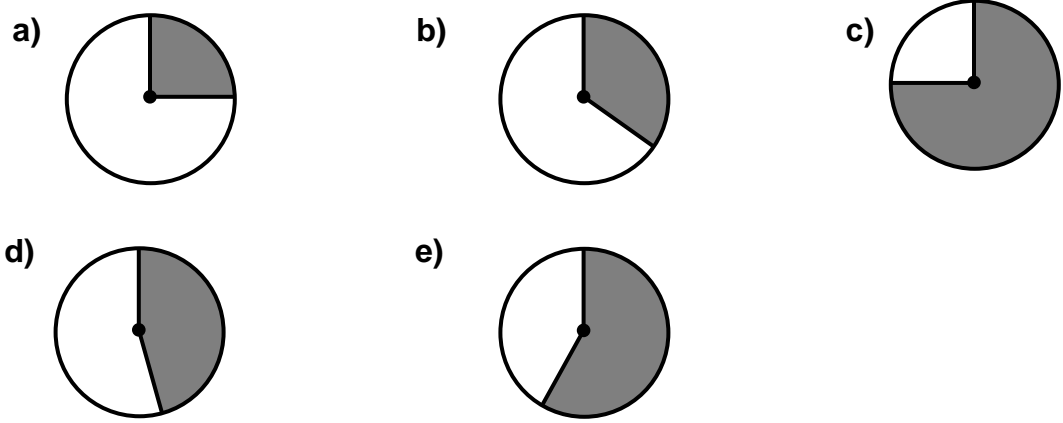
- a) 7      b) 7.5      c) 8      d) 8.5      e) 9

- 32) Find the value of  $x$ :



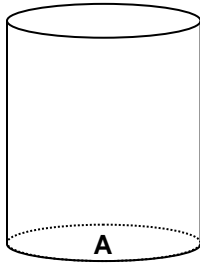
- a)  $9\sqrt{2}$       b)  $9\sqrt{3}$       c)  $10\sqrt{2}$       d)  $10\sqrt{3}$       e)  $10\sqrt{5}$

33) Last year 58 percent of the total number of complaints made to a company were about delays in shipping. In which of the following circle graphs does the shaded area represent the fraction of the total number of complaints made that were about shipping delays last year?



34) Which of the following best approximates the area of the circle shown in the graph above?

- a) 15
- b) 18
- c) 24
- d) 32
- e) 36



35) A right circular cylinder with base  $A$  is shown. If a plane that is neither parallel nor perpendicular to base  $A$  passes through the cylinder, which of the following could be the shape of the intersection of the plane and the cylinder?

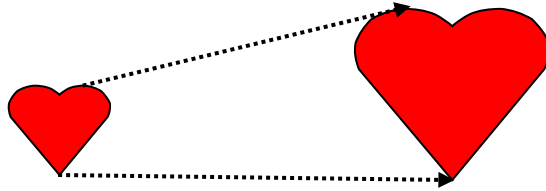
- a) An ellipse with circumference less than the circumference of  $A$
- b) An ellipse with circumference greater than the circumference of  $A$
- c) An ellipse with circumference equal to the circumference of  $A$
- d) A circle with circumference less than the circumference of  $A$
- e) A circle with circumference greater than the circumference of  $A$

36) Which of the following could be the measures of angles of a triangle?

- a)  $19^\circ, 100^\circ, 70^\circ$
- b)  $25^\circ, 100^\circ, 75^\circ$
- c)  $20^\circ, 60^\circ, 60^\circ$
- d)  $90^\circ, 43^\circ, 47^\circ$
- e)  $10^\circ, 100^\circ, 90^\circ$

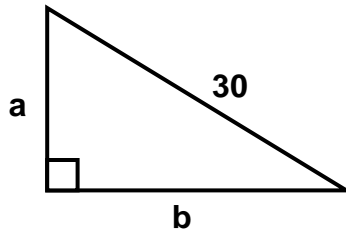
37) An aquarium tank is 3 feet long, 1 foot wide, and 2 feet high. How many gallons of water would it take to fill the tank *two-thirds full*? (A cubic foot is about 7.5 gallons.)

- a) 4
- b) 6
- c) 18
- d) 30
- e) 32



38) This figure above is an example of a(n) -

- a) translation   b) reduction   c) rotation   d) dilation   e) reflection



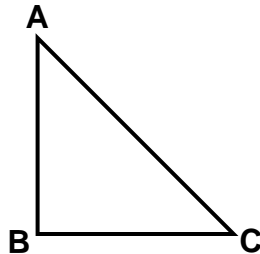
39) Which of the following could be the values of  $a$  and  $b$  in the right triangle above?

- |    | <u>a</u> | <u>b</u> |
|----|----------|----------|
| a) | 5        | 20       |
| b) | 18       | 24       |
| c) | 15       | 15       |
| d) | 17       | 13       |
| e) | 15.5     | 15.5     |

40) A company has 80 million dollars in total expenses for one year. A circle graph shows a sector of 270 degrees representing employee salaries. How many millions of dollars were spent on employee salaries?

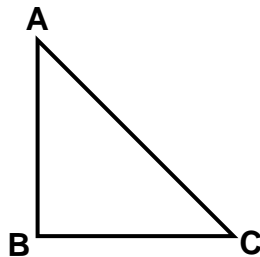
41) The circumference of a circular rug is 136.6 in. What is the approximate diameter of the rug?

- a) 43.5      b) 41.6      c) 25.4      d) 33.5      e) 68.3



42) In right triangle ABC,  $AB = 50$  and  $BC = 50$ . Approximately how long is AC?

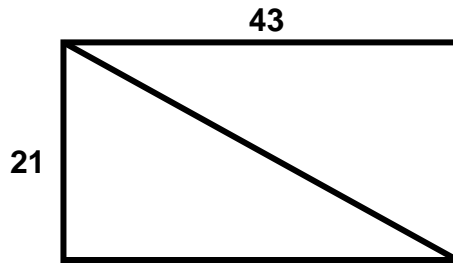
- a)  $50\sqrt{2}$       b)  $50\sqrt{3}$       c)  $50\sqrt{5}$       d)  $25\sqrt{2}$       e)  $25\sqrt{3}$



43) In right triangle ABC,  $AB = 80$  and  $BC = 80$ . Approximately how long is AC?

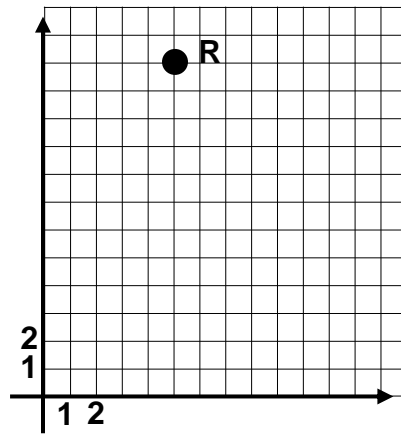
- a) 160      b) 113      c) 146      d) 98      e) 82





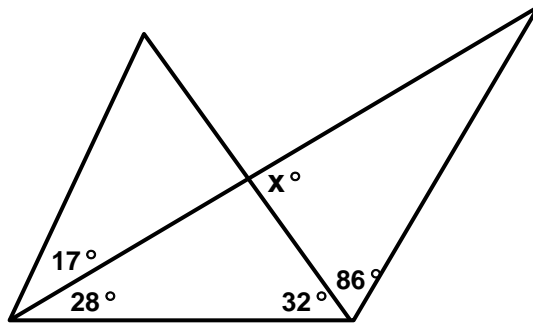
44) What is the length of the diagonal in the rectangle above?

- a) 37.5      b) 38.9      c) 45.1      d) 47.9      e) 51.2



45) What is the distance of point R from the origin?

- a) 18      b) 17      c) 15      d) 14      e) 13

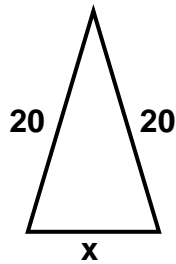


46) What is the value of  $x$  in the picture above?

- a) 37      b) 48      c) 51      d) 54      e) 60

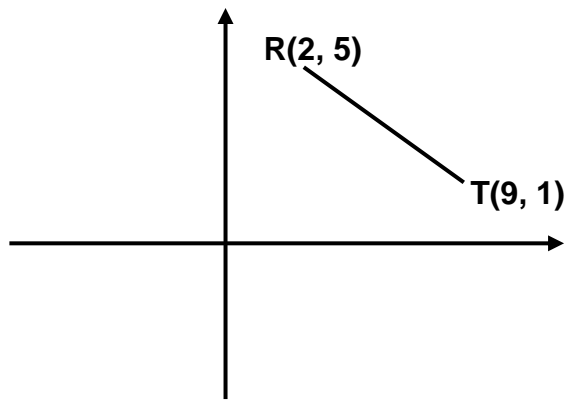
47) A triangle has sides of lengths 3, 5, and  $x$ . Which of the following could be the value of  $x$ ? Indicate all such values.

- a) 1.9       b) 2.3       c) 6.5       d) 8       e) 8.1



48) In the triangle above,  $x$  could be any number except:

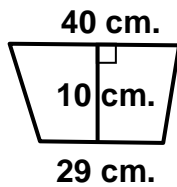
- a) 1      b) 3      c) 15      d) 35      e) 40



49) If the segment  $RT$  is reflected across the  $x$ -axis to the new coordinates  $R'T'$ , which of the following could be the coordinates of  $R'$  and  $T'$ ?

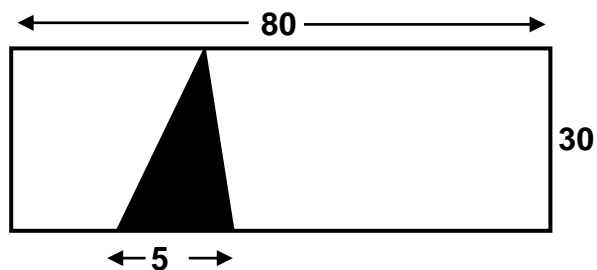
- a)  $(-2, 5)(-9, 1)$       b)  $(-2, -5)(-9, -1)$       c)  $(2, -5)(9, -1)$   
 d)  $(5, 2)(1, 9)$       e)  $(-2, -5)(9, 1)$

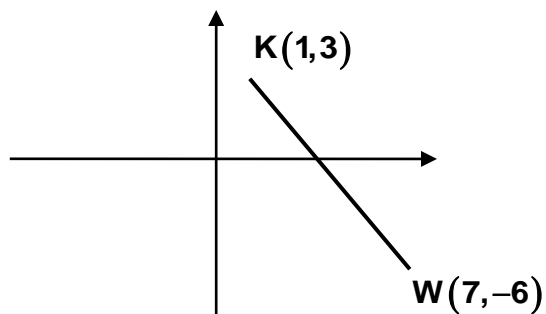
50) What is the area of the trapezoid shown below?



- a) 205      b) 245      c) 285      d) 345      e) 355

51) What is the area of the shaded triangle in the rectangle below?





52) If the segment  $KW$  is reflected across the  $y$ -axis to the new coordinates  $K'W'$ , which of the following could be the coordinates of  $K'$  and  $W'$ ?

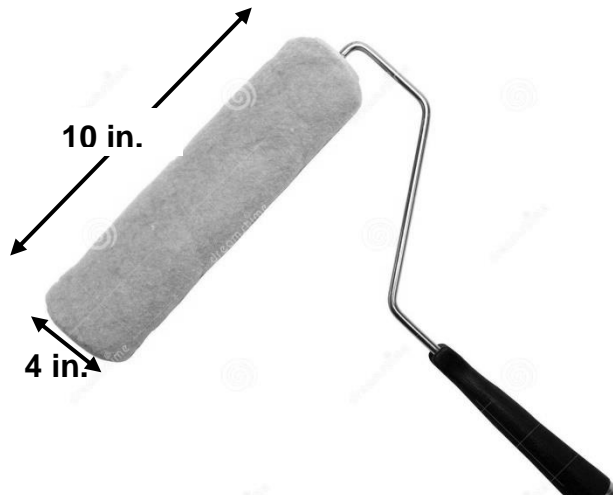
- a)  $(-1, 3)(-7, 6)$       b)  $(-1, -3)(-7, -6)$       c)  $(-1, 3)(-7, -6)$   
d)  $(3, 1)(6, 7)$       e)  $(-1, -3)(7, 6)$

53) A rectangle has a length of 31 feet 8 inches and a width of 24 feet and 7 inches. What is the perimeter of the rectangle?

- a) 56 ft. 3 in.    b) 110 ft. 1 in    c) 112 ft. 6 in.    d) 115 ft    e) 118 ft. 4 in.

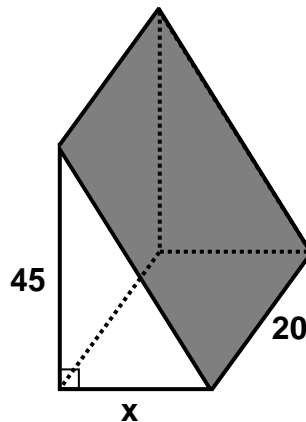
54) If the circumference of a circle is 109.9 feet, which of the following is closest to the area of the circle?

- a) 962      b) 989      c) 1300      d) 1800      e) 3500



55) Allie is getting ready to paint her room with the paint roller shown above. What area will the roller cover in one rotation?

- a)  $40\pi$       b)  $38\pi$       c)  $36.5\pi$       d)  $30\pi$       e)  $15\pi$



56) A right triangular prism is shown above. If the area of the shaded rectangle is 1000, what is the value of  $x$  to the nearest tenth?

**BONUS:** What is the sum of the angles of a triangle in Egypt?