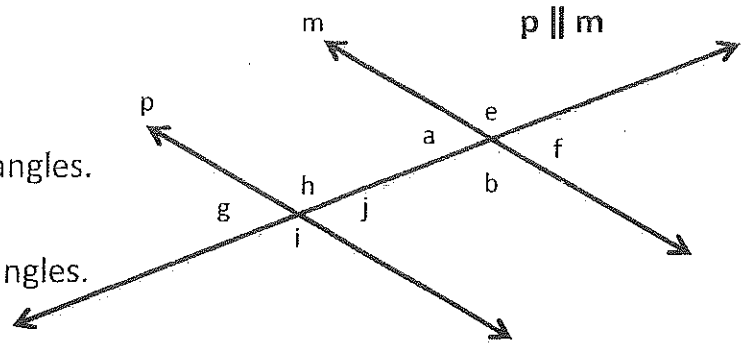


Review: 2D Geometry

Name: _____

Accelerated 7th Grade Math

1. Use the drawing to the right.



a. Name two pairs of same-side interior angles.

$h \& a, j \& b$

b. Name two pairs of alternate-interior angles.

$h \& b, j \& a$

c. Name four pairs of corresponding angles.

$g \& a, h \& e, j \& f, i \& b$

d. Name four pairs of vertical angles.

$h \& i, g \& j, a \& f, b \& e$

e. Name two pairs of supplementary angles that are NOT adjacent or same side interior.

$j \& e, b \& g$

f. Suppose $m\angle i = 120^\circ$, find $m\angle h = 120^\circ$ $m\angle b = 120^\circ$ $m\angle a = 60^\circ$ $m\angle j = 60^\circ$

g. Suppose that $m\angle b = 3x + 12$ and $m\angle i = 4x - 7$. Find $m\angle h$ and $m\angle a$.

$$\begin{array}{r} 3x + 12 = 4x - 7 \\ -3x \quad -3x \\ \hline 12 = x - 7 \\ +7 \quad +7 \\ \hline 19 = x \end{array}$$

$$\begin{aligned} \angle h &= 4(19) - 7 \\ &= 76 - 7 \end{aligned}$$

$$\angle h = 69^\circ$$

$$\angle a = 180 - 69^\circ$$

$$\angle a = 111^\circ$$

h. Suppose that $m\angle g = 5x - 31$ and $m\angle f = 4x - 10$. Find $m\angle g$ and $m\angle f$.

$$\begin{array}{r} 5x - 31 = 4x - 10 \\ -4x \quad -4x \\ \hline x - 31 = -10 \\ +31 \quad +31 \\ \hline x = 21 \end{array}$$

$$\angle g = 5(21) - 31$$

$$\angle g = 74^\circ$$

$$\angle f = 74^\circ$$

2. In the figure, $p \parallel q$, $m\angle 1 = 107^\circ$ and $m\angle 11 = 48^\circ$. Find the angles below.

a) $m\angle 3 = 107^\circ$

d) $m\angle 9 = 48^\circ$

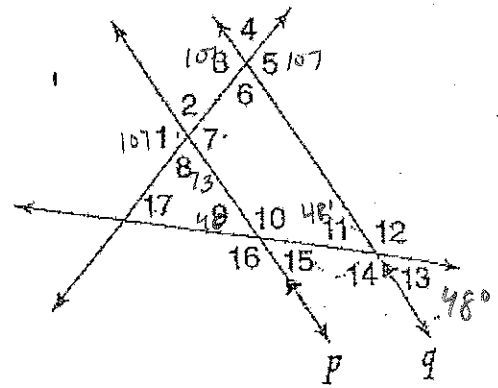
b) $m\angle 5 = 107^\circ$

e) $m\angle 15 = 48^\circ$

c) $m\angle 13 = 48^\circ$

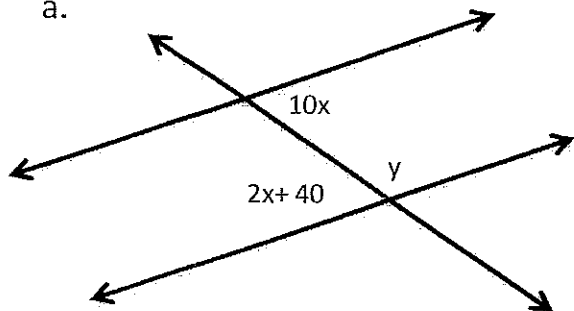
f) $m\angle 17 = 59^\circ$

$$\begin{array}{r} 73 \\ + 48 \\ \hline 121 \end{array} \quad \begin{array}{r} 180 \\ - 121 \\ \hline 59^\circ \end{array}$$



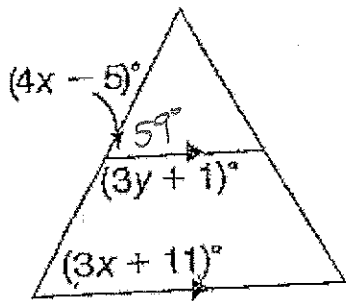
3. Find the missing variables. The lines that appear to be parallel are.

a.



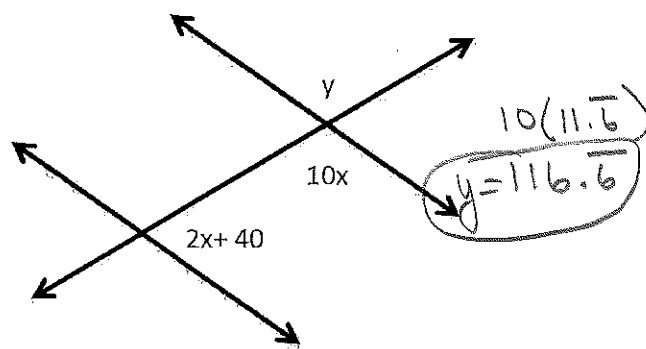
$$\begin{array}{r} 10x = 2x + 40 \\ -2x \quad -2x \\ \hline 8x = 40 \\ \hline x = 5 \end{array} \quad \begin{array}{r} 2(5) + 40 \\ 10 + 40 \\ \hline 50 \\ 180 \\ - 50 \\ \hline 130 \\ \hline y = 130 \end{array}$$

c.



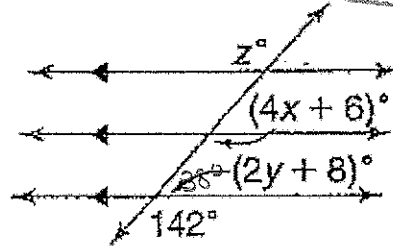
$$\begin{array}{r} 3x + 11 = 4x - 5 \\ -3x \quad -3x \\ \hline 11 = x - 5 \\ +5 \quad +5 \\ \hline 16 = x \end{array} \quad \begin{array}{r} 4(16) - 5 \\ 64 - 5 \\ \hline 59^\circ \\ 180 - 59 = 121 \\ 121 = 3y + 1 \\ -1 \quad -1 \\ \hline 120 = 3y \\ \hline 40 = y \end{array}$$

b.



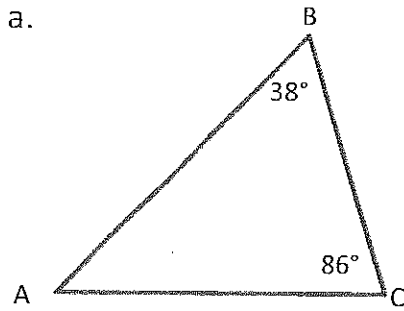
$$\begin{array}{r} 2x + 40 + 10x = 180 \\ 12x + 40 = 180 \\ -40 \quad -40 \\ \hline 12x = 140 \\ \hline x = 11.6 \end{array}$$

d.



$$\begin{array}{r} 142 + 2y + 8 = 180 \\ 150 + 2y = 180 \\ -150 \quad -150 \\ \hline 2y = 30 \\ \hline y = 15 \end{array} \quad \begin{array}{r} 142 = 4x + 6 \\ -6 \quad -6 \\ \hline 136 = 4x \\ \hline 34 = x \\ \hline z = 142^\circ \end{array}$$

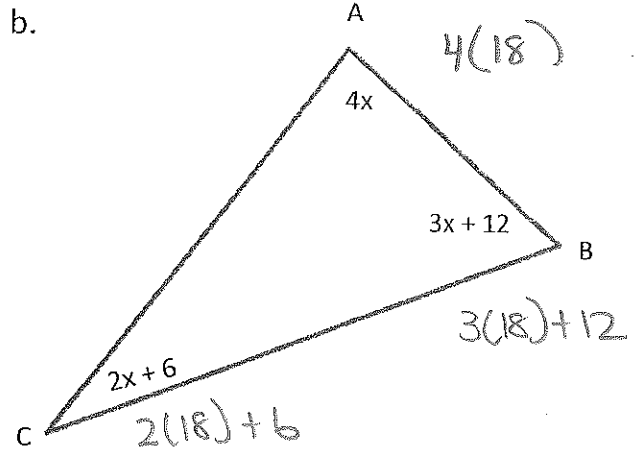
4. Find all the angle measures in each triangle below.



$m\angle A = \underline{56^\circ}$

$$\begin{array}{r} 38 \\ + 86 \\ \hline 124 \end{array}$$

$$\begin{array}{r} 180 \\ - 124 \\ \hline 56^\circ \end{array}$$



$2x + 6 + 3x + 12 + 4x = 180$

$m\angle A = \underline{72^\circ}$

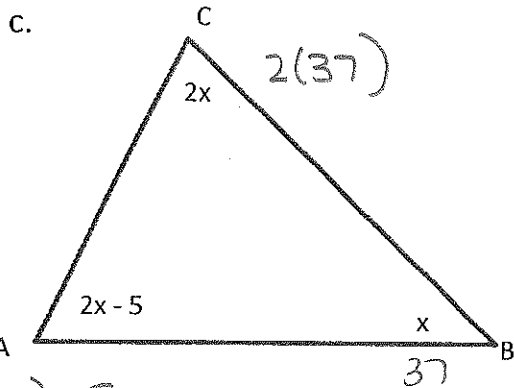
$$\begin{array}{r} 9x + 18 = 180 \\ - 18 \quad - 18 \\ \hline 9x = 162 \end{array}$$

$m\angle B = \underline{66^\circ}$

$$\begin{array}{r} 9x = 162 \\ \hline 9 \quad 9 \end{array}$$

$m\angle C = \underline{42^\circ}$

$x = 18$



$2(37) - 5$

$2x + x + 2x - 5 = 180$

$$\begin{array}{r} 5x - 5 = 180 \\ + 5 \quad + 5 \\ \hline 5x = 185 \end{array}$$

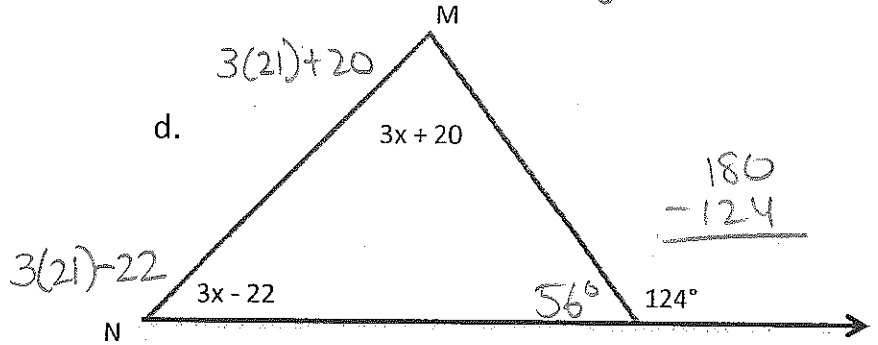
$m\angle A = \underline{69^\circ}$

$$\begin{array}{r} 5x = 185 \\ \hline 5 \quad 5 \end{array}$$

$m\angle B = \underline{37^\circ}$

$m\angle C = \underline{74^\circ}$

$x = 37$



$3(21) - 22$

$\begin{array}{r} 180 \\ - 124 \\ \hline \end{array}$

$3x - 22 + 3x + 20 + 56 = 180$

$$\begin{array}{r} 6x + 54 = 180 \\ - 54 \quad - 54 \\ \hline 6x = 126 \end{array}$$

$$\begin{array}{r} 6x = 126 \\ \hline 6 \quad 6 \end{array}$$

$m\angle M = \underline{83^\circ}$

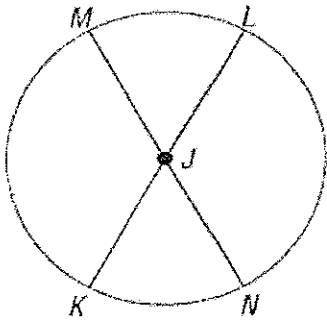
$x = 21$

$m\angle N = \underline{41^\circ}$

$m\angle M\hat{O}N = \underline{56^\circ}$

$m\angle N\hat{O}P = \underline{180^\circ}$

5)



Look at the circle to the left and name...

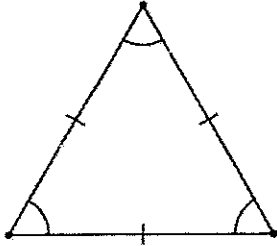
the circle: J

two diameters: $\overline{KL} + \overline{MN}$

four radii: \overline{MJ} , \overline{LJ} , \overline{NJ} , \overline{KJ}

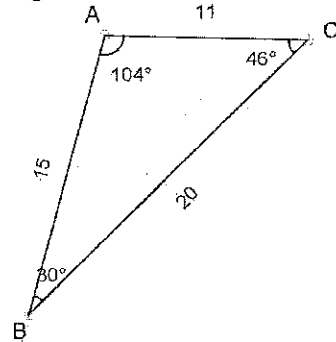
6) Classify the following triangles by their angles and sides lengths.

a)



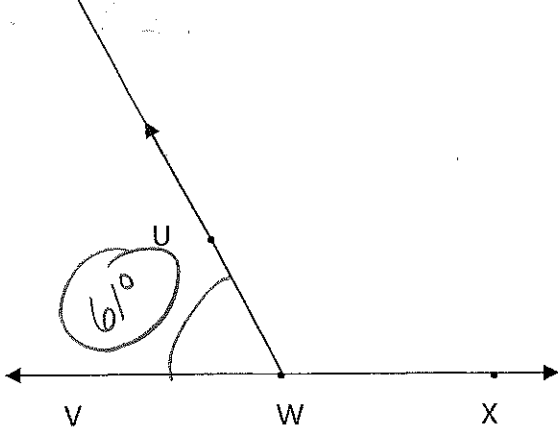
acute
equilateral

b)



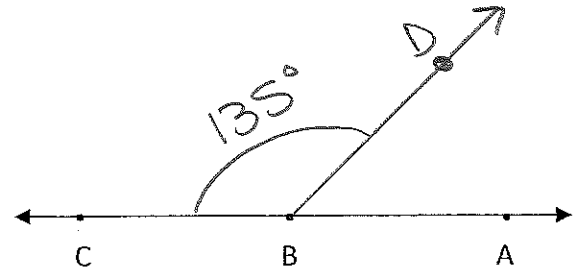
obtuse
scalene

7)



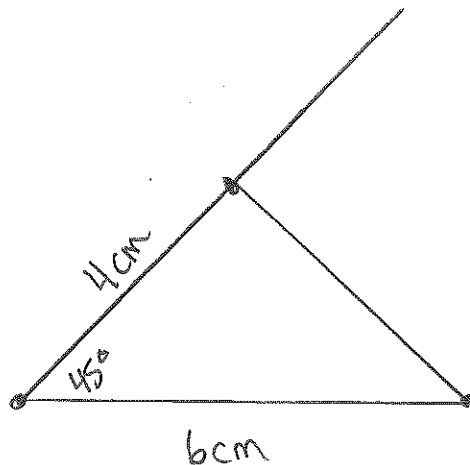
Find $m\angle UWV$ using your protractor

8)



Draw $\angle DBC = 135^\circ$

9) Use your protractor and ruler to draw a triangle with an angle of 45° , a side of 6 cm, and another side of 4 cm.



10) Can the following sides be lengths to a triangle? Show you work to explain

a) 12, 4, 17

$$12 + 4 = 16$$

$$16 < 17$$

NO!

b) 3, 4, 7

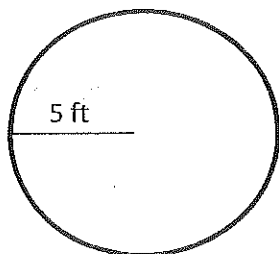
$$3 + 4 = 7$$

$$7 = 7$$

NO

11) Find the area and perimeter/circumference of the following shapes.

a)



Area

$$A = \pi r^2$$

$$A = 3.14 \cdot 5 \cdot 5$$

$$A = 78.5 \text{ ft}^2$$

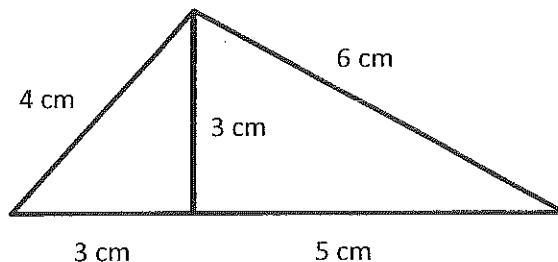
Circumference

$$C = \pi \cdot d$$

$$C = 3.14 \cdot 10$$

$$C = 31.4 \text{ ft}$$

b)



Area

$$A = \frac{1}{2} \cdot b \cdot h$$

$$A = \frac{1}{2} \cdot 8 \cdot 3$$

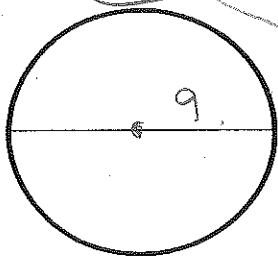
$$A = 12 \text{ cm}^2$$

Perimeter

$$3 + 5 + 6 + 4$$

$$= 18 \text{ cm}$$

12) Find the diameter of the circle



$$\text{Area} = 28.26 \text{ cm}^2$$

$$A = \pi \cdot r^2$$

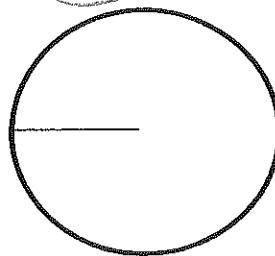
$$\frac{28.26}{3.14} = \frac{3.14 \cdot r^2}{3.14}$$

$$\sqrt{9} = \sqrt{r^2}$$

$$3 = r$$

$$3 \cdot 2 = 6 \text{ cm}$$

13) Find the radius of the circle



$$\text{Circumference} = 81.64 \text{ m}$$

$$C = \pi \cdot d$$

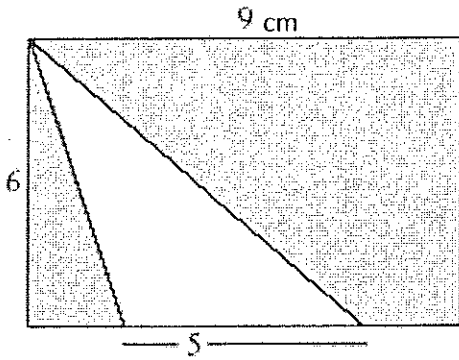
$$\frac{81.64}{3.14} = \frac{3.14 \cdot d}{3.14}$$

$$26 = d$$

$$26 \div 2 = 13 \text{ m}$$

For the following problems, find the area of the shape or the shaded region.

14)



rectangle

$$A = b \cdot h$$

$$A = 9 \cdot 6$$

$$A = 54$$

triangle

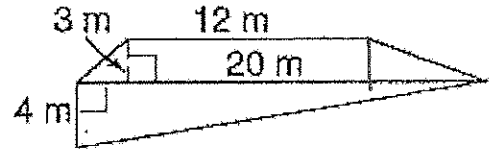
$$A = \frac{1}{2} \cdot b \cdot h$$

$$A = \frac{1}{2} \cdot 5 \cdot 6$$

$$A = 15$$

$$54 - 15 = 39 \text{ units}^2$$

15)



Big Triangle

$$A = \frac{1}{2} \cdot b \cdot h$$

$$A = \frac{1}{2} \cdot 20 \cdot 4$$

$$A = 40$$

Rectangle

$$A = 12 \cdot 3$$

$$A = 36$$

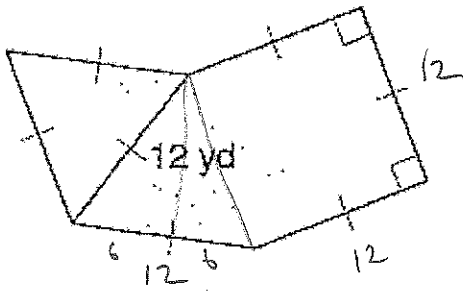
Two Δs

$$A = \frac{1}{2} \cdot 8 \cdot 3$$

$$A = 12$$

$$40 + 36 + 12 = 88 \text{ m}^2$$

16)



Square

$$12 \cdot 12$$

$$144$$

Triangles

$$\frac{1}{2} \cdot 12 \cdot 10.4$$

$$62.34$$

$$a^2 + b^2 = c^2$$

$$6^2 + b^2 = 12^2$$

$$36 + b^2 = 144$$

$$-36 \quad -36$$

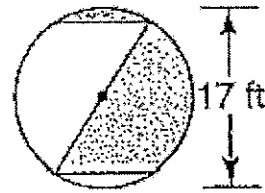
$$\sqrt{b^2} = \sqrt{108}$$

$$b \approx 10.39$$

$$144 + 62.34 + 62.34$$

$$= 268.68 \text{ yd}^2$$

17)



$$A = \pi \cdot r^2$$

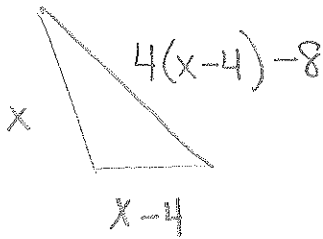
$$A = 3.14 \cdot 8.5 \cdot 8.5$$

$$A = 226.865$$

$$226.865 \div 2 = 113.4 \text{ ft}^2$$

18)

In a triangle, the smallest side is 4 less than the medium side. The longest side is 8 less than 4 times the smallest side. The perimeter is 38 ft. Find each side.



$$x + x - 4 + 4(x - 4) - 8 = 38$$

$$x + x - 4 + 4x - 16 - 8 = 38$$

$$6x - 28 = 38$$

$$+ 28 \quad + 28$$

$$\frac{6x}{6} = \frac{66}{6}$$

$$x = 11$$

Small

$$11 - 4$$

$$7 \text{ ft}$$

Medium x

$$11 \text{ ft}$$

Large

$$4(11) - 4 - 8$$

$$4(7) - 8$$

$$28 - 8$$

$$20 \text{ ft}$$

19)

Look at your answer to #18. What is wrong with it?

7, 11, & 20 cannot form a triangle
because $7 + 11 = 18$, $18 < 20$.

20)

Find the distance between $(-3, 4)$ and $(7, -11)$

$$\sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$

$$\sqrt{(7 - (-3))^2 + (-11 - 4)^2}$$

$$\sqrt{(10)^2 + (-15)^2}$$

$$\sqrt{100 + 225}$$

$$\sqrt{325}$$

$$18 \text{ units}$$

Review Sheet Answers

- A. h & a, j & b B. h & b, j & a C. g & a, h & e, j & f, l & b D. h & i, g & j, a & f, b & e
E. j & e, b & g
F. $m\angle h = 120^\circ$, $m\angle b = 120^\circ$, $m\angle a = 60^\circ$, $m\angle j = 60^\circ$
G. $m\angle h = 69^\circ$, $m\angle a = 111^\circ$
H. $m\angle g = 74^\circ$, $m\angle f = 74^\circ$
- A. 107 B. 107 C. 48 D. 48 E. 48 F. 59
- A. $x = 5$, $y = 130$ B. $x = 11.6666\dots$, $y = 116.6666\dots$
C. $x = 16$, $y = 40$ D. $x = 34$, $y = 15$, $z = 142$
- A. $m\angle A = 56$ B. $m\angle A = 72$, $m\angle B = 66$, $m\angle C = 42$
C. $m\angle A = 69$, $m\angle B = 37$, $m\angle C = 74$ D. $m\angle M = 83$, $m\angle N = 41$, $m\angle MON = 56$, $m\angle NOP = 180$
- Circle: J two diameters: \overline{KL} and \overline{MN} four radii: \overline{MJ} , \overline{LJ} , \overline{NJ} , and \overline{KJ}
- A. acute, equilateral B. obtuse, scalene
- 61
- See answer key online
- See answer key online
- A. NO B. NO
- A. Area = 78.5 ft^2 , circumference = 31.4 ft
B. Area = 12 cm^2 , perimeter = 18 cm
- ~~18 cm~~ 6 cm
- 13 m
- 39 units²
- 88 m²
- ~~272.8 yd²~~ 268.68 yd²
- 113.4 ft²
- small = 7 ft, medium = 11 ft, large = 20 ft
- 7, 11, and 20 cannot form a triangle because $7+11 = 18$ and $18 < 20$.
- 18 units

