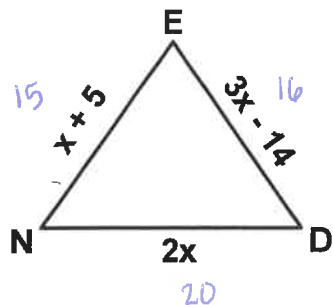


**More Triangles Unit**

Find  $x$ , then list the angles of each triangle in order from least to greatest measure.

1. The perimeter of  $\triangle NED$  is 51 cm.



$$x + 5 + 3x - 14 + 2x = 51$$

$$6x - 9 = 51$$

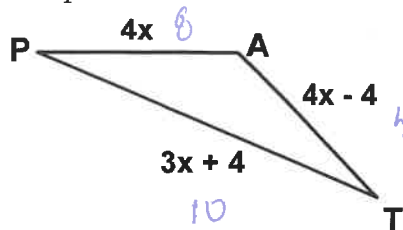
$$6x = 60$$

$$x = 10$$

$$x = \underline{10}$$

$\angle D$   $\angle N$   $\angle E$

2. The perimeter of  $\triangle PAT$  is 22 inches.



$$4x + 3x + 4 + 4x - 4 = 22$$

$$11x = 22$$

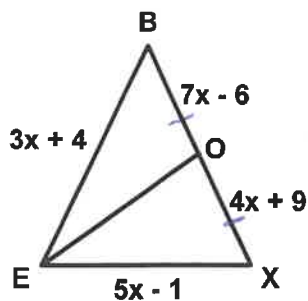
$$x = 2$$

$$x = \underline{2}$$

$\angle P$   $\angle T$   $\angle A$

Find each indicated measure.

3.  $\overline{EO}$  is a median  $x = \underline{5}$

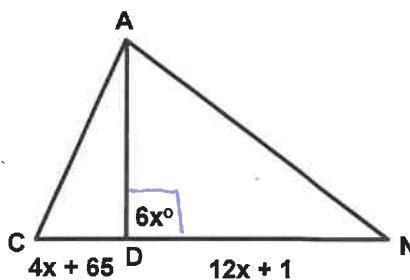


$$4x + 9 = 7x - 6$$

$$15 = 3x$$

$$5 = x$$

4.  $\overline{AD}$  is an altitude  $x = \underline{15}$



$$6x = 90$$

$$x = 15$$

Determine whether it is possible to draw a triangle with sides of the given measures. Write yes or no. Explain your answer.

5. 3, 4, 7

$$\begin{aligned} 3+4 &\stackrel{?}{>} 7 && \text{No} \\ 7 &> 7 \end{aligned}$$

6. 6, 9, 10

$$\begin{aligned} 6+9 &\stackrel{?}{>} 10 && \text{Yes} \\ 15 &> 10 \checkmark \end{aligned}$$

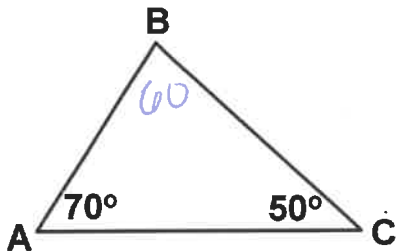
7. 11, 9, 22

$$\begin{aligned} 11+9 &\stackrel{?}{>} 22 && \text{No} \\ 20 &\stackrel{?}{>} 22 \end{aligned}$$

8. 8, 9, 16

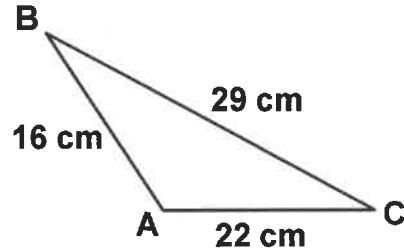
$$\begin{aligned} 8+9 &> 16 && \text{Yes} \\ 17 &> 16 \checkmark \end{aligned}$$

9. List the sides from shortest to longest.



$\overline{AB}, \overline{AC}, \overline{BC}$

10. List the angles in order from least to greatest.



$\angle C, \angle B, \angle A$

## Polygon Unit

1. Find the sum of the measure if the interior angles of each shape.

Hexagon

$$(6-2) \times 180$$

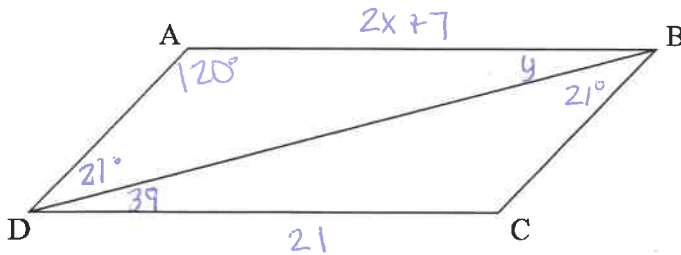
$$720^\circ$$

Octagon

$$(8-2) \times 180$$

$$1080$$

2. ABCD is a parallelogram. If  $AB = 2x + 7$ ,  $CD = 21$ ,  $m\angle CBD = 21^\circ$ ,  $m\angle ABD = y$  and  $m\angle A = 120^\circ$ , find each indicated measure.

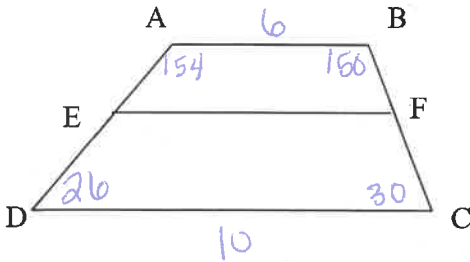


$$x = \underline{7} \quad y = \underline{39}$$

$$m\angle C = \underline{120^\circ} \quad m\angle ADB = \underline{21^\circ}$$

$$m\angle BDC = \underline{39^\circ}$$

3. ABCD is a trapezoid. If  $AB = 6$ ,  $DC = 10$ ,  $m\angle B = 150^\circ$ , and  $m\angle D = 26^\circ$ , find each indicated measure.



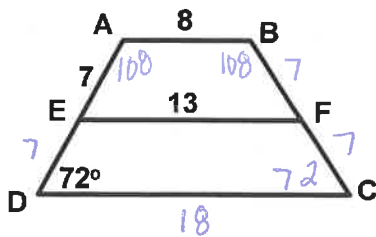
$$\frac{6+10}{2} = \frac{16}{2} = 8$$

$$EF = \underline{8} \quad m\angle BFE = \underline{30^\circ}$$

$$m\angle C = \underline{30^\circ} \quad m\angle DEF = \underline{154^\circ}$$

$$m\angle AEF = \underline{26^\circ} \quad m\angle A = \underline{154^\circ}$$

4. Given isosceles trapezoid ABCD, find each measure.



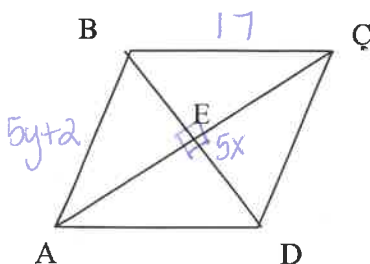
$$m\angle A = \underline{108^\circ} \quad m\angle BFE = \underline{72^\circ}$$

$$m\angle EFC = \underline{108^\circ} \quad m\angle C = \underline{72^\circ}$$

$$DC = \underline{18} \quad BF = \underline{7}$$

$$FC = \underline{7} \quad BC = \underline{14}$$

5. ABCD is a rhombus. If  $AB = 5y + 2$ ,  $BC = 17$ , and  $m\angle CED = 5x$ , find each indicated measure.



$$5y + 2 = 17$$

$$5y = 15$$

$$y = 3$$

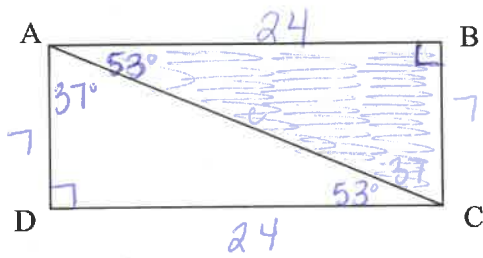
$$5x = 90$$

$$x = 18$$

$$x = \underline{18}$$

$$y = \underline{3}$$

6. ABCD is a rectangle. If  $AB = 24$ ,  $BC = 7$ , and  $m\angle BAC = 53^\circ$ , find each indicated measure.



$$24^2 + 7^2 = c^2$$

$$625 = c^2$$

$$25 = c$$

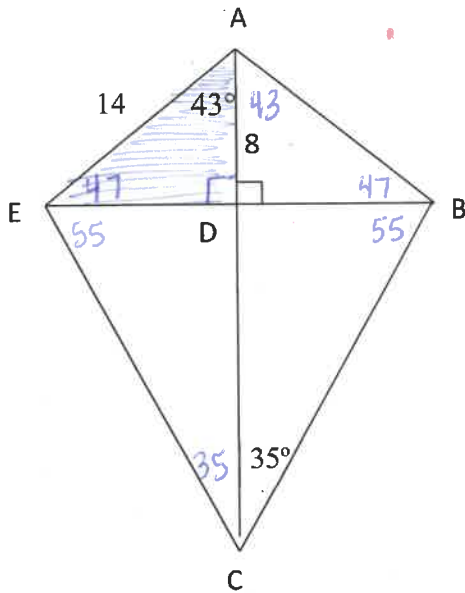
$AC = \underline{25} \quad AD = \underline{7}$

$BD = \underline{25} \quad DC = \underline{24}$

$m\angle D = \underline{90^\circ} \quad m\angle ACB = \underline{37^\circ}$

$m\angle ACD = \underline{53^\circ} \quad m\angle DAC = \underline{37^\circ}$

7. ABCD is a kite. Find each indicated measure.



$$14^2 = 8^2 + b^2$$

$$132 = b^2$$

$$11.5 = b$$

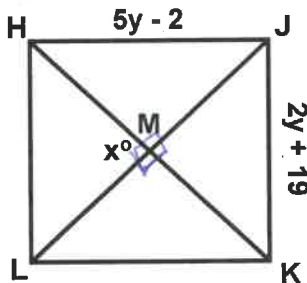
$AB = \underline{14} \quad ED = \underline{11.5}$

$EB = \underline{23} \quad m\angle BAD = \underline{43^\circ}$

$m\angle ADE = \underline{90^\circ} \quad m\angle ABD = \underline{47^\circ}$

$m\angle DBC = \underline{55^\circ} \quad m\angle ECD = \underline{35^\circ}$

8. Given Square HJKL, solve for x, y, and JK.



$$5y - 2 = 2y + 19$$

$$3y = 21$$

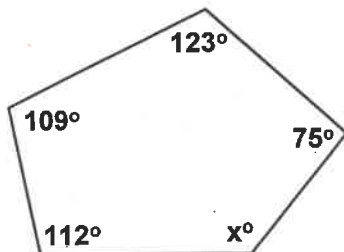
$$y = 7$$

$x = \underline{90}$

$y = \underline{7}$

$JK = \underline{33}$

9. Solve for x.



\* 5 sided figure

$$(5-2) \times 180$$

$$540$$

$$\begin{array}{r} 540 \\ - 123 \\ - 109 \\ - 112 \\ - 75 \\ \hline 121 \end{array}$$

$x = \underline{121}$

## Similarity Unit

1. Solve for x.

$$\frac{5}{8} = \frac{3x}{9}$$

$$24x = 45$$

$$x = 1.875$$

2. Solve for x.

$$\frac{x}{4} = \frac{x+9}{12}$$

$$12x = 4x + 36$$

$$8x = 36$$

$$x = 4.5$$

3. The ratio of the angles of a quadrilateral is 3:4:5:6. Find the degree measure of each angle.

add to 360

$$3x + 4x + 5x + 6x = 360$$

$$18x = 360$$

$$x = 20$$

$$3(20) = 60^\circ$$

$$4(20) = 80^\circ$$

$$5(20) = 100^\circ$$

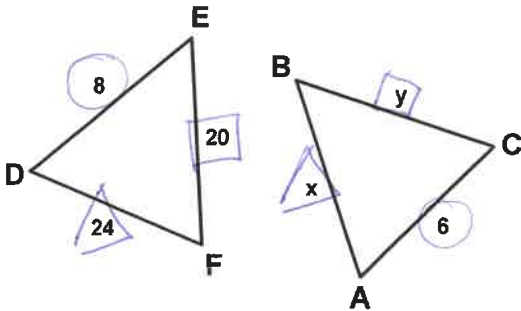
$$6(20) = 120^\circ$$

4. The ratio of students to teachers is 28:1. If there are 200 teachers at a school, find the number of students there must be at the school.

$$\begin{array}{l} \text{Students} \rightarrow \frac{28}{1} = \frac{x}{200} \\ \text{Teachers} \rightarrow \end{array}$$

$$x = 5600 \text{ Students}$$

5. Use  $\triangle DEF \sim \triangle ACB$ , to find x and y. (Hint: Use the similarity statement to set up a proportion and solve.)



$$\frac{8}{6} = \frac{24}{x}$$

$$8x = 144$$

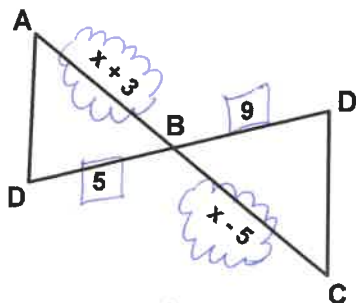
$$x = 18$$

$$\frac{8}{6} = \frac{20}{y}$$

$$8y = 120$$

$$y = 15$$

6. Use  $\triangle ABE \sim \triangle CBD$ , to find x. (Hint: Use the similarity statement to set up a proportion and solve.)



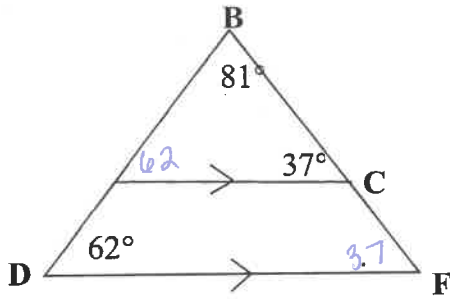
$$\frac{x+3}{x-5} = \frac{5}{9}$$

$$9x + 27 = 5x - 25$$

$$4x = -52$$

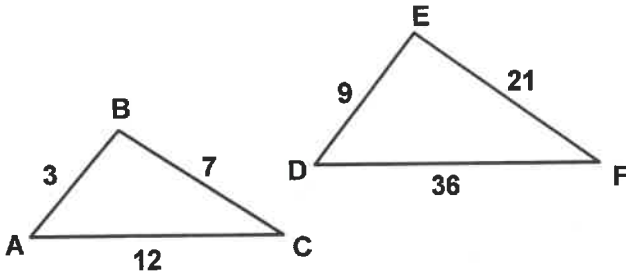
$$x = -13$$

7. Is  $\triangle ABC \sim \triangle DBF$ ? If so, state the reason why SSS, SAS, or AAA. (If you select SSS or SAS, please show your reduced ratios.)



Yes; Angle Angle

8. Is  $\triangle ABC \sim \triangle DEF$ ? If so, state the reason why SSS, SAS, or AAA. (If you select SSS or SAS, please show your reduced ratios.)



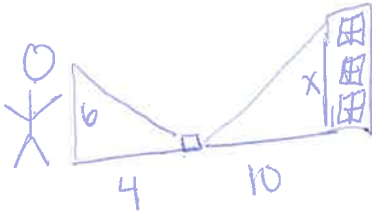
$$\frac{3}{9} = \frac{1}{3}$$

$$\frac{7}{21} = \frac{1}{3}$$

$$\frac{12}{36} = \frac{1}{3}$$

Yes; SSS

9. Ben is trying to figure out how tall a building is by using a mirror. Ben places the mirror 10 feet away from the building. He is about 6 feet tall and stands 4 feet away from the mirror. What is the height of the building?

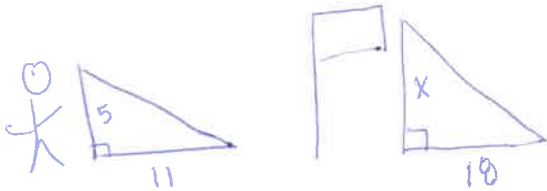


$$\frac{6}{x} = \frac{4}{10}$$

$$4x = 60$$

$$x = 15 \text{ ft}$$

10. Marybeth uses shadows to estimate the height of a flagpole. The shadow of the flagpole is 18 feet long. Marybeth is 5 feet tall and her shadow is 11 feet long. What is the height of the flagpole?

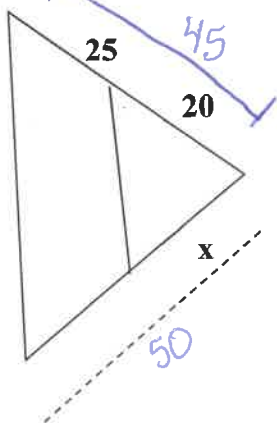


$$\frac{5}{x} = \frac{11}{18}$$

$$11x = 90$$

$$x = 8.18 \text{ ft}$$

11. Find x.

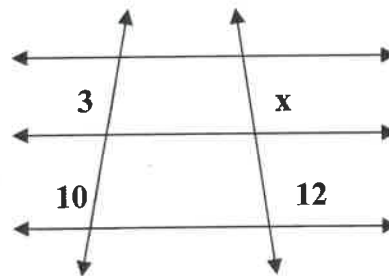


$$\frac{x}{50} = \frac{20}{45}$$

$$45x = 1000$$

$$x = 22.2$$

12. Find x.



$$\frac{3}{10} = \frac{x}{12}$$

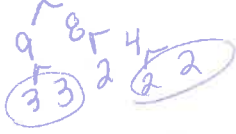
$$10x = 36$$

$$x = 3.6$$

# Right Triangle Unit

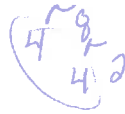
Simplify each radical.

1.  $\sqrt{72}$



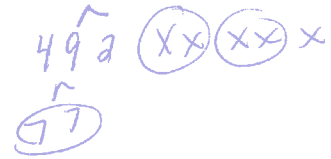
$6\sqrt{2}$

2.  $5\sqrt{32}$



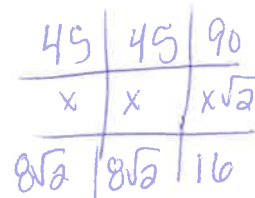
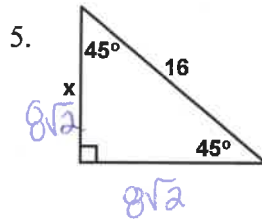
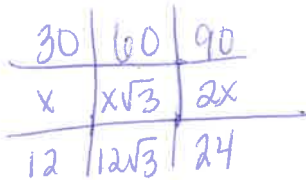
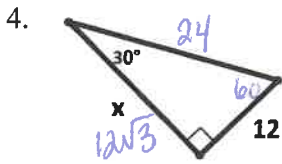
$20\sqrt{2}$

3.  $\sqrt{98x^5}$

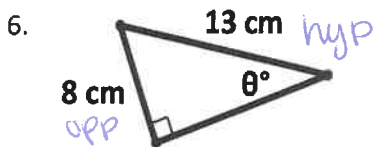


$7x^2\sqrt{2x}$

Find each indicated length. Leave your answer in reduced radical form.

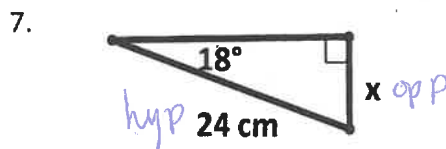


Find each indicated length. Round to the nearest hundredths place



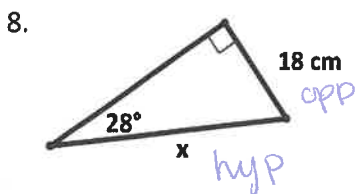
$\sin(\theta) = \frac{8}{13}$

$x = 37.9799$



$\sin(18) = \frac{x}{24}$

$x = 7.4164$



$\sin(28) = \frac{18}{x}$

$x = 38.341$



$\tan(\theta) = \frac{6}{8}$

$x = 36.8699$

