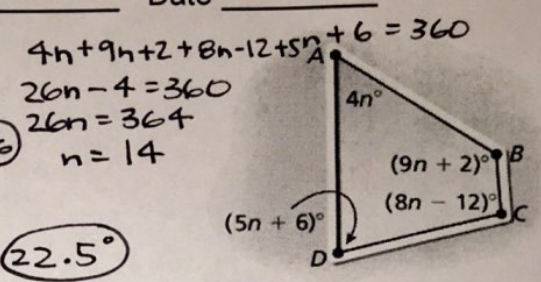


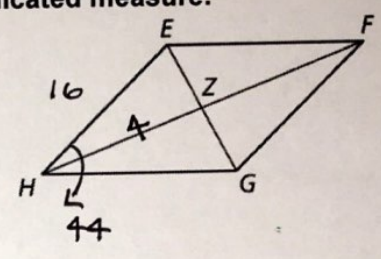
A window is the shape of a quadrilateral. Find the indicated measure.

- $m\angle A$   $4(14) = 56$
  - $m\angle B$   $9(14) + 2 = 128$
  - $m\angle C$   $8(14) - 12 = 100$
  - $m\angle D$   $5(14) + 6 = 76$
5. Find the measure of each interior angle of a regular dodecagon.  
 $\frac{(12-2)180}{12} = 150$
6. Find the measure of each exterior angle of a regular 16-gon.  
 $\frac{360}{16} = 22.5$

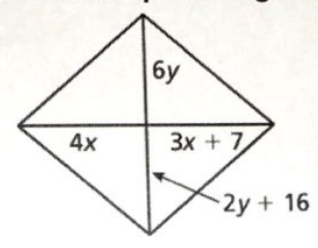
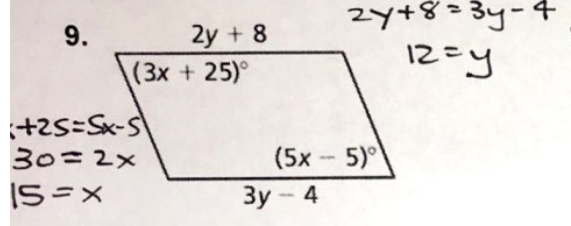


In parallelogram EFGH, EH = 16, HZ = 4, and  $m\angle EHG = 44^\circ$ . Find the indicated measure.

- FH  $4 \cdot 2 = 8$
- $m\angle FEH$   $180 - 44 = 136$



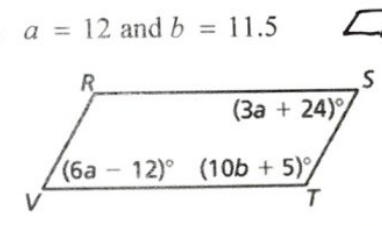
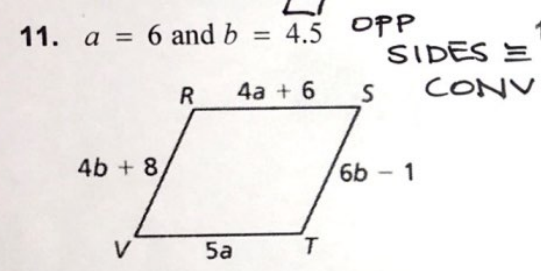
Find the values of x and y that make the quadrilateral a parallelogram.



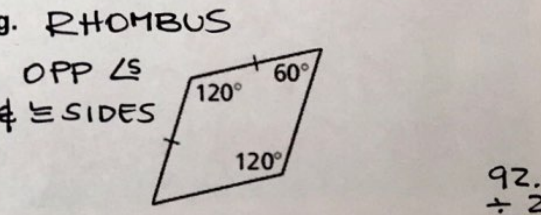
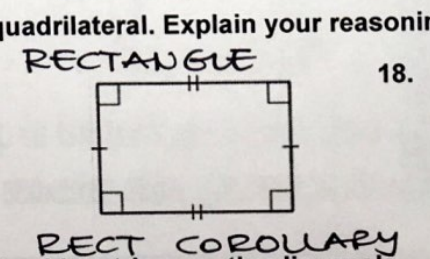
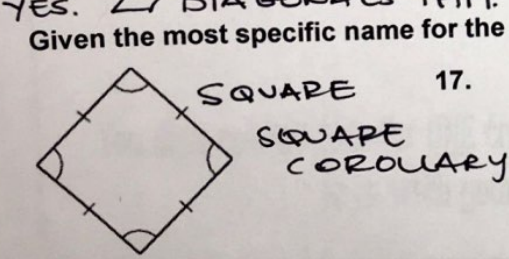
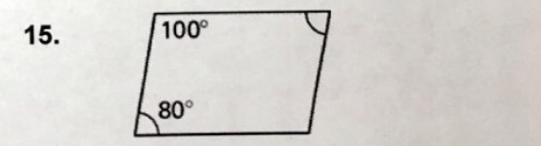
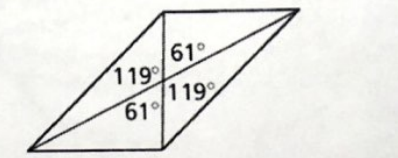
$6y = 2y + 16$   
 $4y = 16$   
 $y = 4$

$4x = 3x + 7$   
 $x = 7$

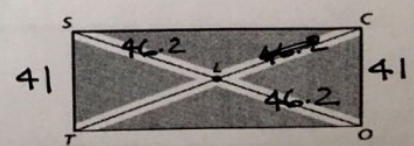
State which theorem you can use to show that the quadrilateral is a parallelogram. Explain your reasoning.



From the information given, can you determine whether the quadrilateral is a parallelogram? Explain your reasoning.



The flag of Scotland is a rectangle with white stripes as the diagonals. In rectangle SCOT,  $SO = 92.4$ , and  $CO = 41$ . Find the indicated measure.



- OL 46.2
- ST 41
- CT 92.4
- LT 46.2

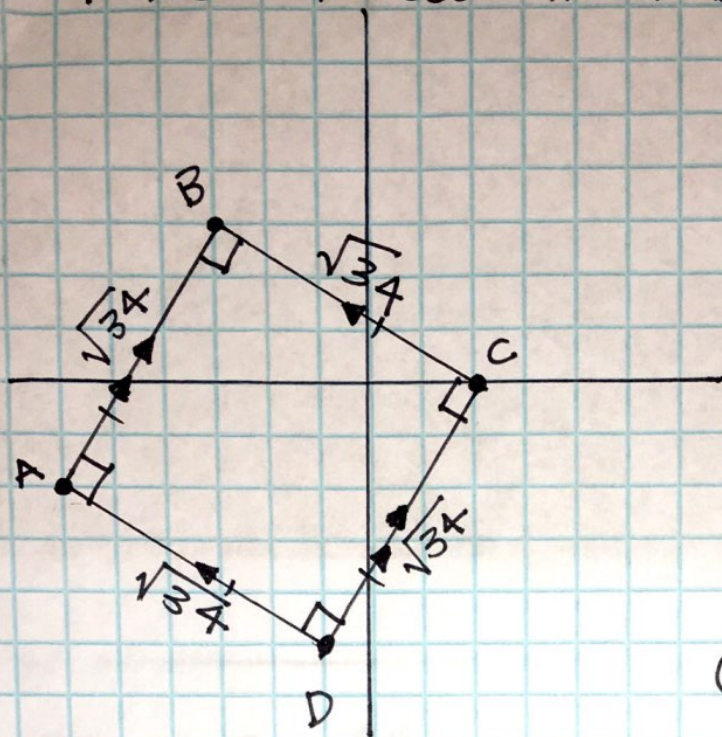
Determine whether the parallelogram with the given vertices is a rectangle, rhombus, or square. Give all names that apply. Explain your reasoning.

- $A(-6, -2), B(-3, 3), C(2, 0), D(-1, -5)$   
 RECTANGLE, RHOMBUS, SQUARE
- $L(-3, 4), M(3, 3), N(4, -3), O(-2, -2)$   
 RHOMBUS

23

\* YOU MAY ALSO CHECK DIAGONAL CHARACTERISTICS

CHECK SIDES LENGTHS WITH DISTANCE FORM.



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

$$\overline{AB} = \sqrt{(-3 - (-6))^2 + (3 - (-2))^2}$$

$$(-6, -2)(-3, 3) \sqrt{(3)^2 + (5)^2}$$

$$\sqrt{9 + 25}$$

$$\sqrt{34}$$

$$\overline{DC} = \sqrt{(2 - (-1))^2 + (0 - (-5))^2}$$

$$(-1, -5)(2, 0) \sqrt{(3)^2 + (5)^2}$$

$$\sqrt{9 + 25}$$

$$\sqrt{34}$$

$$\overline{BC} = \sqrt{(2 - (-3))^2 + (0 - 3)^2}$$

$$(-3, 3)(2, 0) \sqrt{(5)^2 + (-3)^2}$$

$$\sqrt{25 + 9}$$

$$\sqrt{34}$$

$$\overline{AD} = \sqrt{(-1 - (-6))^2 + (-5 - (-2))^2}$$

$$(-6, -2)(-1, -5) \sqrt{(-5)^2 + (-3)^2}$$

$$\sqrt{25 + 9}$$

$$\sqrt{34}$$

CHECK SLOPES. IF OPPOSITE RECIPROCALS THEN ANGLES = 90

$$\overline{AB} = \frac{5}{3}$$

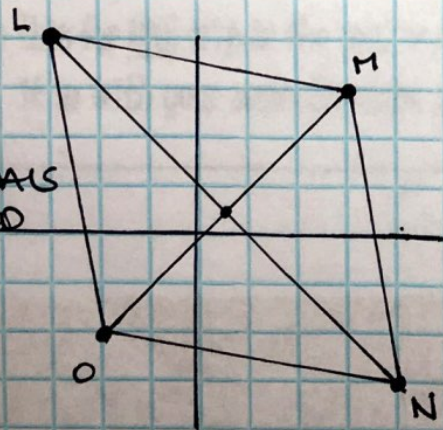
$$\overline{CD} = \frac{5}{3}$$

$$\overline{BC} = -\frac{3}{5}$$

$$\overline{AD} = -\frac{3}{5}$$

24

BOTH DIAGONALS ARE BISECTED AT  $(\frac{1}{2}, \frac{1}{2})$



YOU CAN CHECK DIAGONAL MIDPOINTS.

$$LN$$

$$(-3, 4)(4, -3)$$

$$\frac{-3+4}{2}, \frac{4+(-3)}{2} = (\frac{1}{2}, \frac{1}{2})$$

$$MO$$

$$(3, 3)(-2, -2)$$

$$\frac{3+(-2)}{2}, \frac{(3)+(-2)}{2} = (\frac{1}{2}, \frac{1}{2})$$

$$\overline{LM} = -\frac{1}{6} \quad \overline{LO} = -\frac{6}{1}$$

$$\overline{ON} = -\frac{1}{6} \quad \overline{MN} = -\frac{6}{1}$$

SLOPES

\* NOT OPP SIGNS SO NOT 90° WHICH MEANS NOT SQUARE OR RECT.

In kite  $EFGH$ ,  $m\angle FHG = 15^\circ$ , and  $m\angle FEH = 146^\circ$ . Find the indicated measure.

25.  $m\angle FEJ$

71

26.  $m\angle EHJ$

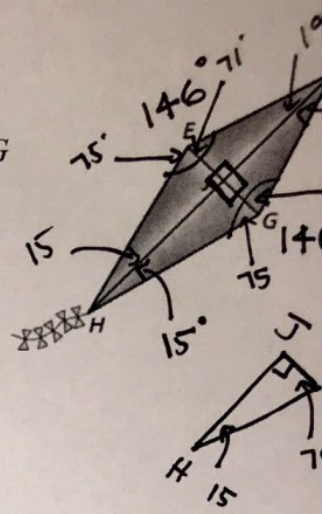
15

27.  $m\angle FGJ$

71°

28.  $m\angle EHG$

30



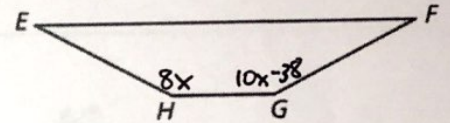
29. Find the length of the midsegment of the trapezoid.

$$\begin{array}{r} 164 \\ + 84 \\ \hline 248 \\ \div 2 \\ \hline 124 \end{array}$$

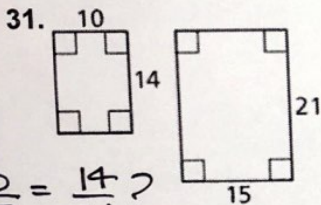


30. Find the value of  $x$  such that  $m\angle H = 8x^\circ$  and  $m\angle G = (10x - 38)^\circ$  in the isosceles trapezoid.

$$\begin{array}{r} 8x = 10x - 38 \\ -8x \quad -8x \\ \hline 0 = 2x - 38 \\ 38 = 2x \\ 19 = x \end{array}$$



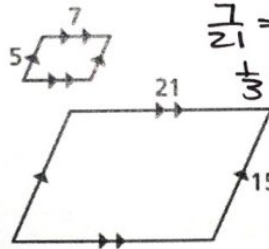
Determine whether the polygons are similar.



$$\frac{10}{15} = \frac{14}{21} ?$$

$$\frac{2}{3} = \frac{2}{3} \text{ YES}$$

32.

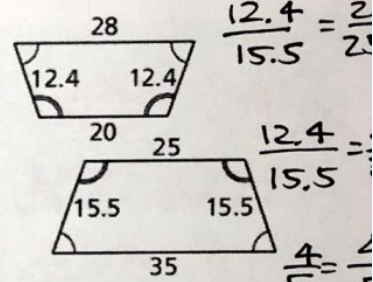


$$\frac{7}{21} = \frac{5}{15} ?$$

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

YES

33.



YES

In the diagram,  $ABCD \sim EFGH$ . Find the following.

34. scale factor

$$\frac{15}{10} = \frac{3}{2}$$

35.  $\frac{EH}{15} = \frac{24}{x}$

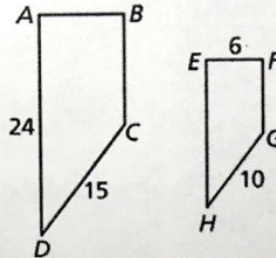
$$15x = 240$$

$$x = 16$$

36.  $\frac{AB}{15} = \frac{x}{6}$

$$10x = 90$$

$$x = 9$$

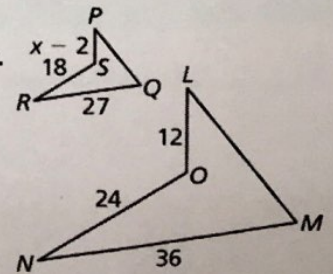


In the diagram,  $LMNO \sim PQRS$ . Complete the proportions and congruence statements.

37.  $\angle P \cong \angle L$

38.  $\angle M \cong \angle Q$

39.  $\frac{MN}{RQ} = \frac{LM}{PQ}$



40. Find the value of  $x$ .

11

$$\frac{x-2}{18} = \frac{12}{24}$$

$$18 \cdot 12 = 24(x-2)$$

$$216 = 24x - 48$$

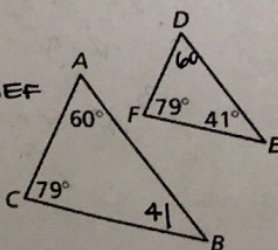
$$264 = 24x$$

$$11 = x$$

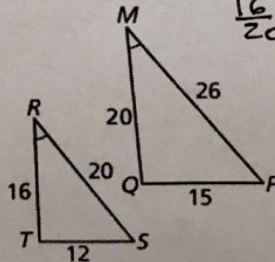
Determine whether the triangles are similar. If they are, write a similarity statement. Explain your reasoning.

41.

YES  
 $ABC \sim DEF$   
AA ~



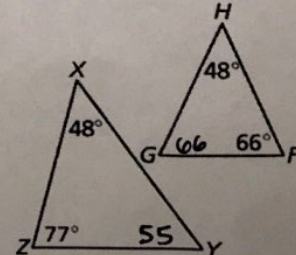
42.



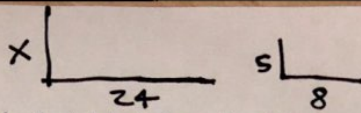
$\frac{16}{20} \neq \frac{20}{26}$

NO

43.



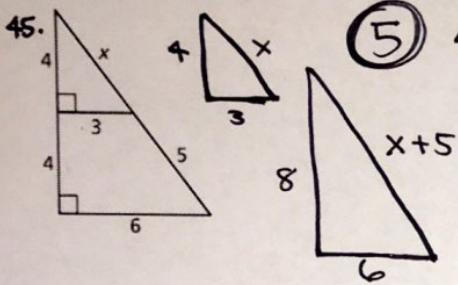
NO.  
ONLY  $1 \cong \angle$



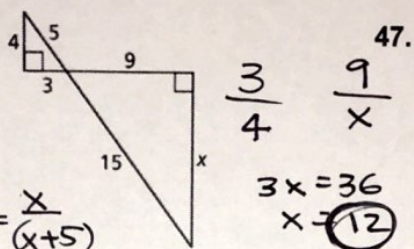
44. Your geometry class goes outside to measure the height of the school's flagpole. A student who is 5 feet tall stands up straight and casts a shadow that is 8 feet long. At the same time the flagpole casts a shadow that is 24 feet long. What is the height of the flagpole? **(15)**

$$\frac{x}{24} = \frac{5}{8} \quad 120 = 8x \quad 15 = x$$

Find the value of  $x$  that makes the triangles similar.



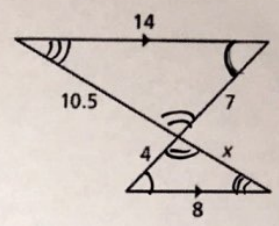
**(5)**



$$\frac{4}{8} = \frac{x}{(x+5)}$$

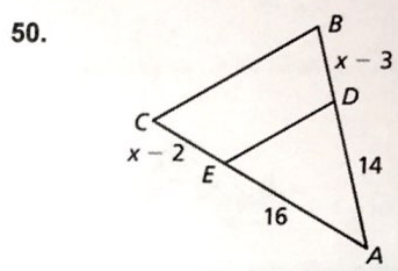
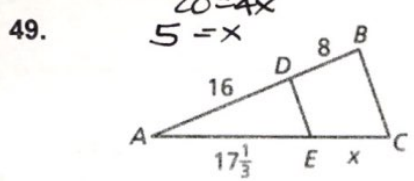
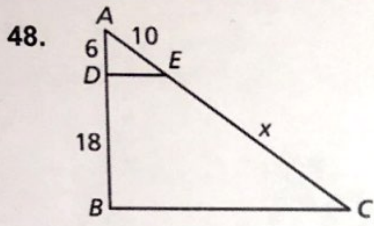
$$4(x+5) = 8x \\ 4x + 20 = 8x \\ 20 = 4x \\ 5 = x$$

47.  $\frac{3}{4} = \frac{9}{x}$   
 $3x = 36$   
 $x = 12$



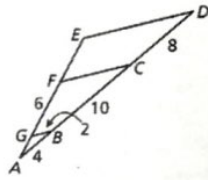
$$\frac{x}{8} = \frac{7}{14} \\ 56 = 14x \\ 4 = x$$

Find the value of  $x$  so that  $\overline{BC} \parallel \overline{DE}$ .

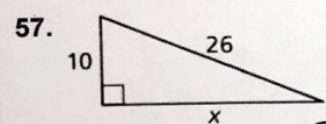


Determine the length of the segment.

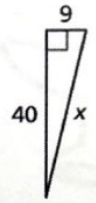
51.  $\overline{AG}$     52.  $\overline{FC}$     53.  $\overline{FE}$     54.  $\overline{ED}$   
 55.  $\overline{AE}$     56.  $\overline{AD}$



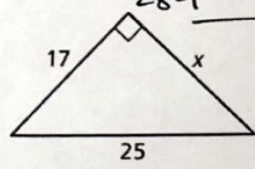
Find the value of  $x$ . Then tell whether the side lengths form a Pythagorean triple.



$$10^2 + x^2 = 26^2 \\ 100 + x^2 = 676 \\ x^2 = 576 \\ \boxed{x = 24}$$



$$9^2 + 40^2 = x^2 \\ 81 + 1600 = x^2 \\ \sqrt{1681} = \sqrt{x^2} \\ \boxed{41 = x}$$



$$17^2 + x^2 = 25^2 \\ 289 + x^2 = 625 \\ -289 \quad -289 \\ \hline \sqrt{x^2} = \sqrt{336} \\ \boxed{x = 18.3} \\ \text{or} \\ \boxed{x = 4\sqrt{21}}$$

60. You fly 470 miles due west from Chicago, Illinois, to Omaha, Nebraska. You then fly 437 miles to St. Louis, Missouri. Finally, you fly 300 miles back to Chicago. Is the triangle formed by your trip *acute*, *right*, or *obtuse*?