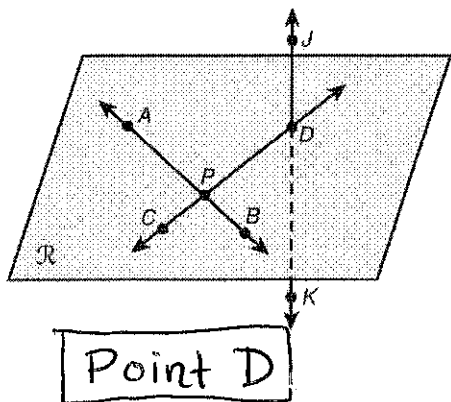
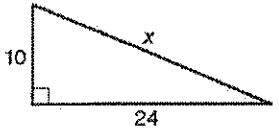


1. Name the intersection of \overline{JK} and plane R .



Point D

2. Use the Pythagorean Theorem to find the length of the hypotenuse.



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

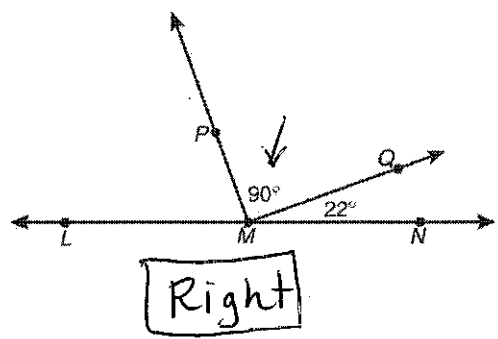
$$10^2 + 24^2 = c^2$$

$$100 + 576 = c^2$$

$$676 = c^2$$

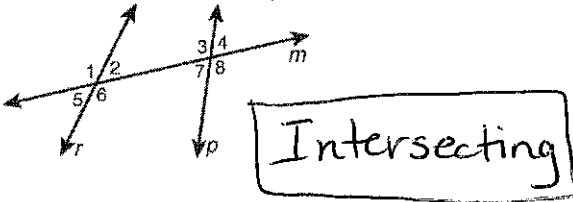
$c = 26$

3. Classify $\angle QMP$ as acute, right, or obtuse.



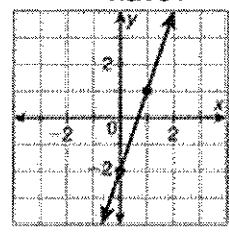
Right

4. How are line p and line m related?



Intersecting

5. What type of slope does the line have?

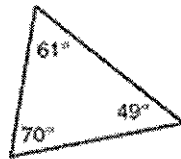


Positive

6. What is the slope of the line that passes through $(4, 0)$ and $(8, -1)$?

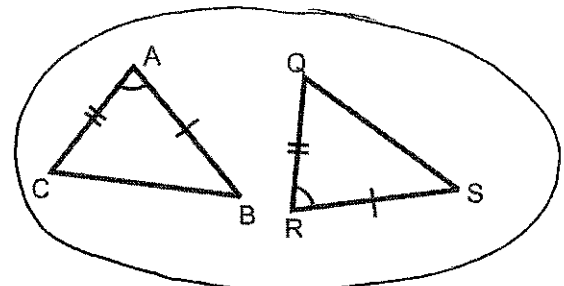
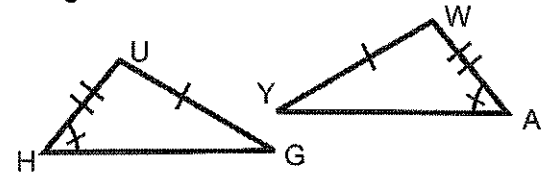
$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{-1 - 0}{8 - 4} = \frac{-1}{4}$$

7. Classify the triangle by its angles and sides.



Acute Scalene

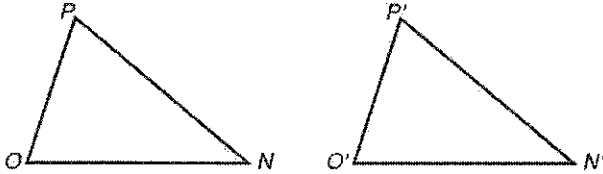
8. Which two triangles are congruent by the SAS theorem? Write the congruence statement.



$\triangle BAC \cong \triangle SRQ$
 $\triangle ABC \cong \triangle RSQ$
 $\triangle CAB \cong \triangle QRS$

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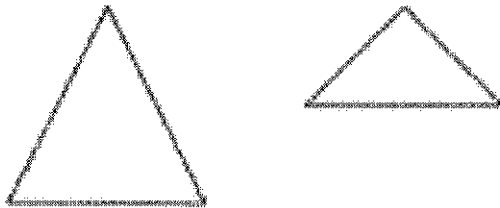
9. Name the transformation.



Translation

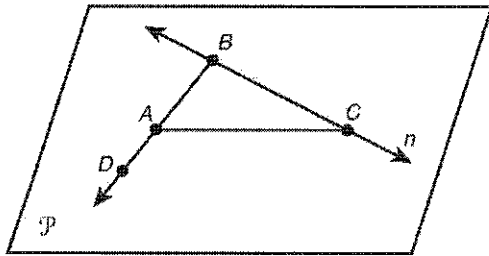
A **dilation** is a transformation that changes the size of a figure but not its shape. The preimage and the image are always similar.

10. Tell whether the transformation appears to be a dilation. Explain.



- A. Yes; the figures are similar, and the image is not turned or flipped.
- B.** No; the figures are not similar.

Use the figure for Exercises 11–14.



11. Name a line.

\overleftrightarrow{BC} \overleftrightarrow{CB} line n

12. Name a segment on line n .

\overline{BC} \overline{CB}

13. Name a ray with endpoint A.

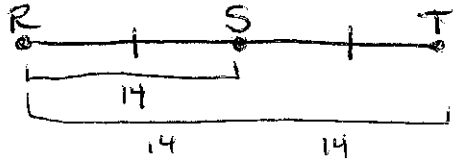
\overrightarrow{AD}

14. Name the intersection of \overline{BC} and \overline{AB} .

Point B

15. S is the midpoint of \overline{RT} , and $RS = 14$.

Find RT .

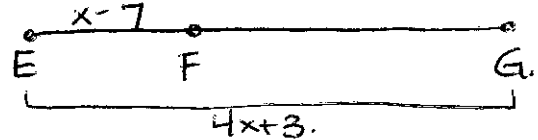


$$14 + 14 = 28$$

16. $\overline{LM} \cong \overline{MP}$, and $LM = 9$. Find MP .

$$MP = 9$$

17. F is between E and G , $EF = x - 7$, and $EG = 4x + 3$. Find FG .



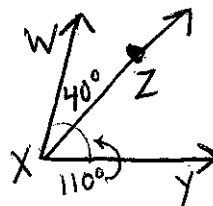
$$EF + FG = EG$$

$$x - 7 + FG = 4x + 3$$

$$-x + 7 \quad -x + 7$$

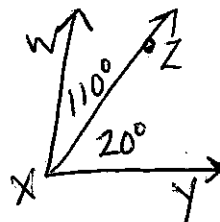
$$FG = 3x + 10$$

18. Z is in the interior of $\angle WXY$. $m\angle WXZ = 40^\circ$, and $m\angle WXY = 110^\circ$. Find $m\angle ZXY$.



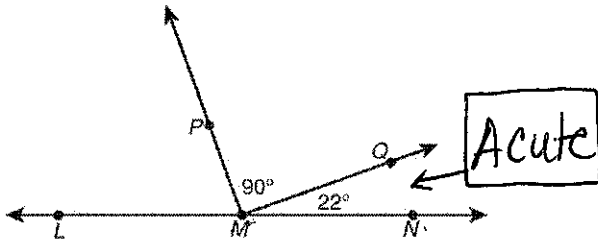
$$110 - 40 = 70^\circ$$

19. Z is in the interior of $\angle WXY$. If $m\angle WXZ = 110^\circ$, and $m\angle ZXY = 20^\circ$, what is $m\angle WXY$?



$$110 + 20 = 130^\circ$$

20. Classify $\angle QMN$ as acute, right, or obtuse.



21. $\angle A$ and $\angle B$ are complementary. $m\angle A = 29^\circ$. Find $m\angle B$.

$$90 - 29 = \boxed{61^\circ}$$

22. $\angle A$ and $\angle B$ are supplementary. $m\angle A = 137^\circ$. Find $m\angle B$.

$$180 - 137^\circ = \boxed{43^\circ}$$

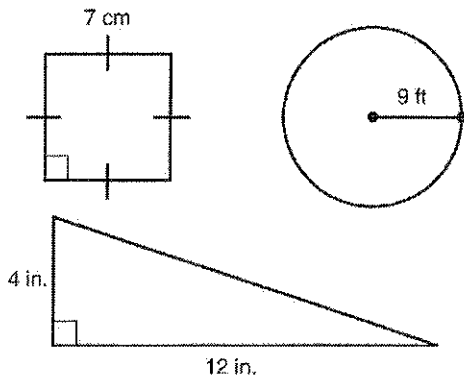
23. $\angle A$ and $\angle B$ are complementary. $m\angle A = (5x + 2)^\circ$. Find $m\angle B$.

$$90 - (5x + 2)$$

$$90 - 5x - 2$$

$$\boxed{88 - 5x}$$

Use the figures for Exercises 24–26.



24. Find the perimeter of the square.

$$P = 4s$$

$$P = 4(7)$$

$$\boxed{P = 28 \text{ cm}}$$

25. Find the area of the triangle.

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

$$A = \frac{12 \cdot 4}{2}$$

$$\rightarrow A = \frac{48}{2}$$

$$\boxed{A = 24 \text{ in}^2}$$

26. Find the circumference of the circle. Express your answer in terms of π .

$$C = 2\pi r$$

$$C = 2 \cdot \pi \cdot 9$$

$$\boxed{C = 18\pi \text{ ft}}$$

27. Find the area of a square with $s = 7.6$ centimeters.

$$A = s^2$$

$$A = (7.6)^2$$

$$\boxed{A = 57.76 \text{ cm}^2}$$

28. Find the area of a circle with a diameter of 6 feet. Use 3.14 for π .

$$A = \pi r^2$$

$$A = \pi \cdot 3^2$$

$$A = 9\pi$$

$$\boxed{A = 28.26 \text{ ft}^2}$$

$d = 2r$
 $\frac{6}{2} = \frac{2r}{2}$
 $3 = r$

29. Find the coordinates of the midpoint of \overline{GH} with endpoints $G(-5, 4)$ and $H(-5, 8)$.

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2} \right)$$

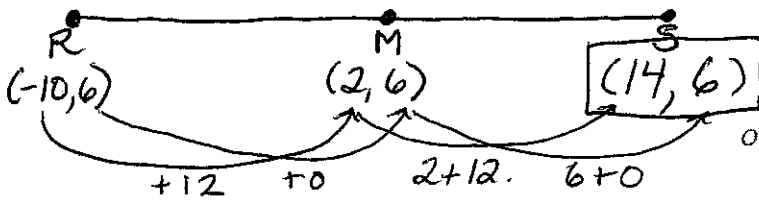
$$M = \left(\frac{-5 + (-5)}{2}, \frac{4 + 8}{2} \right)$$

$$M = \left(\frac{-10}{2}, \frac{12}{2} \right)$$

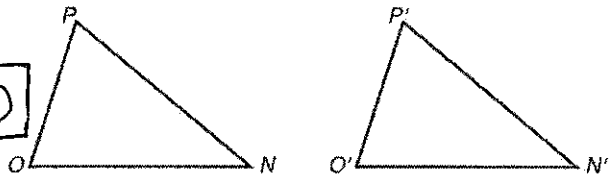
$$\boxed{M = (-5, 6)}$$

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30. M is the midpoint of \overline{RS} , and M has coordinates $(2, 6)$. R has coordinates $(-10, 6)$. Find the coordinates of S .



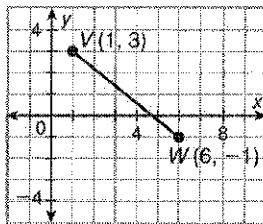
33. Identify the transformation as a reflection, a rotation, or a translation.



Translation.

31. Use the Distance Formula to find VW .

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



$$d = \sqrt{(6-1)^2 + (-1-3)^2}$$

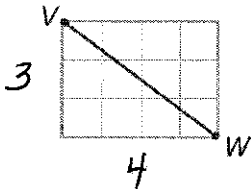
$$d = \sqrt{5^2 + (-4)^2}$$

$$d = \sqrt{25 + 16}$$

$$d = \sqrt{41}$$

$d = 6.4$

32. Use the Pythagorean Theorem to find VW .



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

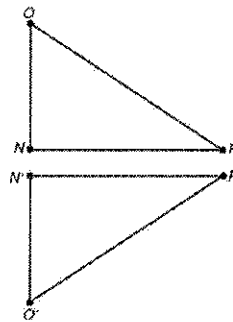
$$3^2 + 4^2 = c^2$$

$$9 + 16 = c^2$$

$$\sqrt{25} = \sqrt{c^2}$$

$5 = c$

34. Identify the transformation.



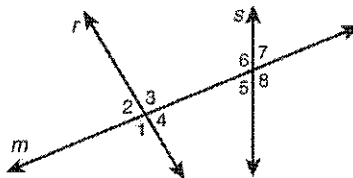
Reflection.

35. The coordinates of the endpoints of a segment are $A(-2, 3)$ and $B(2, 1)$. Find the coordinates for the endpoints of the image of \overline{AB} after the translation $(x, y) \rightarrow (x + 3, y - 2)$.

$$A(-2, 3) \rightarrow (-2+3, 3-2) \rightarrow (1, 1)A$$

$$B(2, 1) \rightarrow (2+3, 1-2) \rightarrow (5, -1)B$$

Use the figure below for exercises 36-41



36. What is the name given to the angle pair $\angle 3$ and $\angle 5$?

Alternate Interior

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37. What is the name given to the angle pair $\angle 1$ and $\angle 5$?

Corresponding.

38. What is the name given to the angle pair $\angle 8$ and $\angle 5$?

Linear Pair

39. What is the name given to the angle pair $\angle 7$ and $\angle 5$?

Vertical.

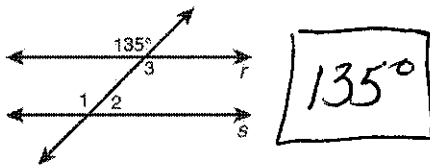
40. What is the name given to the angle pair $\angle 1$ and $\angle 7$?

Alternate Exterior

41. What is the name given to the angle pair $\angle 3$ and $\angle 6$?

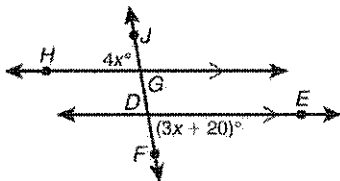
Same Side Interior.

42. Given $r \parallel s$. What is the measure of $\angle 1$?



135°

43. Find the measure of $\angle FDE$.



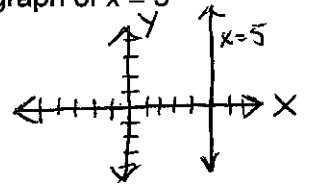
$$\begin{array}{r} 4x = 3x + 20 \\ -3x \quad -3x \\ \hline x = 20 \end{array} \quad \begin{array}{l} m\angle FDE = 3x + 20 \\ = 3(20) + 20 \\ = 60 + 20 \\ = 80^\circ \end{array}$$

44. Find the slope of \overline{JK} through $J(1, 1)$ and $K(2, 3)$.

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{3 - 1}{2 - 1} = \frac{2}{1} = 2$$

45. Write *True* or *False*. The graph of $x = 5$ is a vertical line.

True.



46. Write the equation of the line through $(3, 4)$ and $(2, 1)$ in slope-intercept form.

$$m = \frac{1 - 4}{2 - 3} = \frac{-3}{-1} = 3 \quad y = mx + b$$

$$\begin{array}{l} \text{use } (2, 1) \\ 1 = 3(2) + b \\ 1 = 6 + b \\ -6 \quad -6 \\ \hline -5 = b \end{array}$$

$$y = 3x - 5$$

47. Write the equation of the line through $(4, 6)$ with slope $\frac{3}{4}$ in slope-intercept form.

$$y = mx + b$$

$$6 = \frac{3}{4}(4) + b$$

$$6 = \frac{3}{4}\left(\frac{4}{1}\right) + b$$

$$6 = 3 + b$$

$$\begin{array}{r} -3 \quad -3 \\ \hline 3 = b \end{array}$$

$$y = \frac{3}{4}x + 3$$

48. Determine whether the lines are parallel, intersect, or coincide.

$$y = -3x + 4$$

$$y = -3x - 8$$

same slope

different y-intercept

Parallel

49. Complete the sentence. If the product of the slopes of two lines equals -1 , then the lines are perpendicular.

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50. Determine whether the line through (0, 4) and (2, 0) and the line through (-2, 3) and (-4, 2) are parallel, perpendicular, or neither.

$$m = \frac{0-4}{2-0} = \frac{-4}{2} = \boxed{-2}$$

$$m = \frac{2-3}{-4-(-2)} = \frac{-1}{-2} = \boxed{\frac{1}{2}}$$

opposite reciprocals

AND $-\frac{2}{1} \cdot \frac{1}{2} = \boxed{-1}$ perpendicular

51. Write True or False. $y = -3x + 4$ and $y = 3x + 4$ are parallel.

False

52. Determine whether the lines $3x + 2y = 6$ and $4y = -6x - 12$ are parallel, intersect, or coincide.

$$\begin{array}{r} 3x + 2y = 6 \\ -3x \quad -3x \\ \hline 2y = -3x + 6 \end{array}$$

$$\frac{2y}{2} = \frac{-3x+6}{2}$$

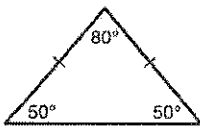
$$y = -\frac{3}{2}x + 3$$

same slope
different y-int

$$\begin{array}{r} 4y = -6x - 12 \\ \frac{4y}{4} = \frac{-6x-12}{4} \\ \hline y = -\frac{3}{2}x - 3 \end{array}$$

parallel

Use the figure for Exercises 53 and 54.



53. Classify the triangle by its angle measures.

Acute.

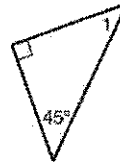
54. Classify the triangle by its side lengths.

Isosceles.

55. Complete the sentence. All of the angles in an equilateral triangle measure

 60°

56. What is the measure of $\angle 1$?

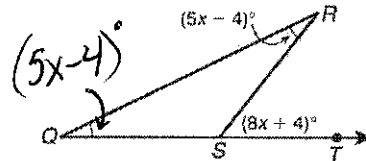


$$90 - 45 = \boxed{45^\circ}$$

57. The measure of the smallest angle of a right triangle is 27° . What is the measure of the second to smallest angle?

$$90 - 27 = \boxed{63^\circ}$$

58. Find the measure of $\angle RST$.



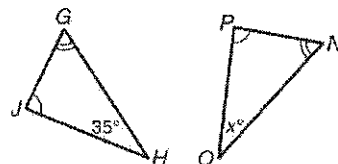
$$8x + 4 = 5x - 4 + 5x - 4$$

$$\begin{array}{r} 8x + 4 = 10x - 8 \\ -8x + 8 \quad -8x + 8 \\ \hline 12 = 2x \end{array}$$

$$\frac{12}{2} = \frac{2x}{2}$$

$$\boxed{6 = x}$$

59. Given: $\triangle GHJ \cong \triangle NOP$. What is the value of x ?



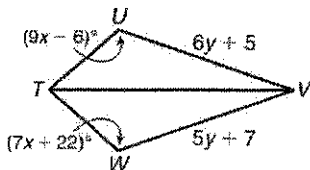
$$\boxed{x = 35^\circ}$$

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60. Given: $\triangle TUV \cong \triangle TWV$. Find $m\angle U$ and UV .



$$\begin{array}{r} 9x - 6 = 7x + 22 \\ -7x + 7x \quad -7x + 7x \\ \hline 2x = 28 \\ x = 14 \end{array} \qquad \begin{array}{r} 6y + 5 = 5y + 7 \\ -5y + 5y \quad -5y + 5y \\ \hline y = 2 \end{array}$$

$$\begin{array}{l} m\angle U = 9x - 6 \\ = 9(14) - 6 \\ = 120^\circ \end{array}$$

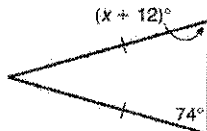
$$\begin{array}{l} UV = 6y + 5 \\ = 6(2) + 5 \\ = 12 + 5 \\ = 17 \end{array}$$

64. What postulate or theorem proves $\triangle AED \cong \triangle CEB$?



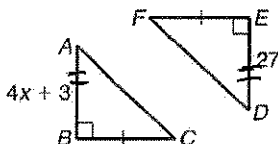
SAS

65. Find the value of x .



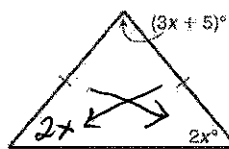
$$\begin{array}{r} x + 12 = 74 \\ -12 \quad -12 \\ \hline x = 62 \end{array}$$

61. If $\overline{AB} \cong \overline{DE}$, what additional congruence statement is needed to prove $\triangle ABC \cong \triangle DEF$ by SSS?



$\overline{AC} \cong \overline{DF}$

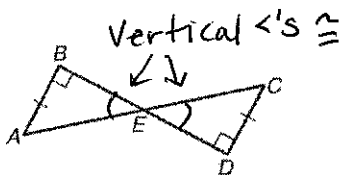
66. Find the value of x .



$$\begin{array}{r} 2x + 2x + 3x + 5 = 180 \\ 7x + 5 = 180 \\ -5 \quad -5 \\ \hline 7x = 175 \\ x = 25 \end{array}$$

Use the figure for Exercises 62 and 63.

63.



62. Write True or False. You can use AAS to prove $\triangle ABE \cong \triangle CDE$.

True

63. What additional congruence statement is needed to prove $\triangle ABE \cong \triangle CDE$ by HL?

$\overline{AE} \cong \overline{CE}$

67. Solve the proportion. $\frac{2}{3} = \frac{6}{x}$

$$\begin{array}{l} 2x = 18 \\ \hline x = 9 \end{array}$$

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68. Given that $15x = 5y$, find the ratio of x to y in simplest form.

$$\frac{15x}{y} = \frac{5y}{x} \quad \frac{x}{y}$$

$$\frac{15x}{15y} = \frac{5}{15}$$

$$\frac{x}{y} = \frac{5}{15} = \frac{1}{3}$$

69. Given that $6x = 14y$, find the ratio of y to x in simplest form.

$$\frac{6x}{x} = \frac{14y}{x} \quad \frac{y}{x}$$

$$6 = \frac{14y}{x}$$

$$\frac{3}{7} = \frac{6}{14} = \frac{y}{x}$$

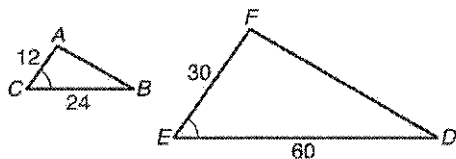
70. The local day care facility has a ratio of 1 adult for every 6 children. How many adults are working if there are 42 children?

$$\frac{1 \text{ adult}}{6 \text{ children}} \quad \frac{1}{6} = \frac{x}{42}$$

$$6x = 42$$

$$x = 7$$

71. Determine whether the triangles are similar. If so, write the similarity ratio and a similarity statement.

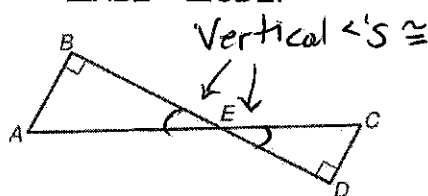


$$\frac{12}{30} = \frac{2}{5} \quad \text{By SAS}$$

$$\frac{24}{60} = \frac{2}{5} \quad \Delta ACB \sim \Delta FED$$

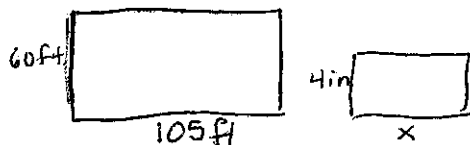
$$\angle C \cong \angle E$$

72. Identify the similarity postulate or theorem that can be used to prove $\Delta ABE \sim \Delta CDE$.



AA Similarity P

73. A rectangular field has a length of 105 feet and a width of 60 feet. On a map of the field, the width was drawn as 4 inches. What measurement should represent the length?

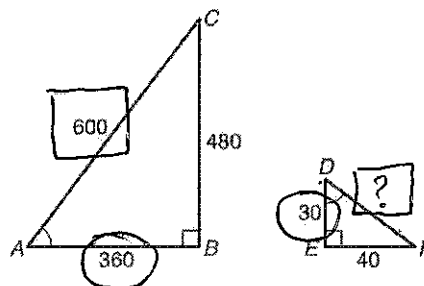


$$\frac{\text{width}}{\text{length}} \quad \frac{60}{105} = \frac{4}{x}$$

$$60x = 420$$

$$x = 7 \text{ in}$$

74. Find DF .



$$\frac{\text{large}}{\text{small}} \quad \frac{360}{30} = \frac{600}{x}$$

$$360x = 18000$$

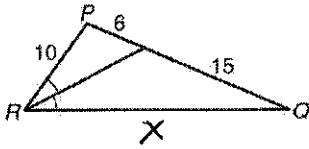
$$x = 50$$

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75. Find RQ.

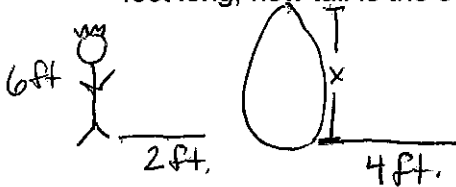


$$\frac{6}{15} = \frac{10}{x}$$

$$6x = 150$$

$$x = 25$$

76. Mentone, Indiana, claims to have the world's largest egg sculpture. A 6-foot-tall person standing next to the egg sculpture casts a shadow that is 2 feet long. If the egg casts a shadow that is 4 feet long, how tall is the sculpture?



$$\frac{\text{height}}{\text{shadow}} = \frac{6}{2} = \frac{x}{4}$$

$$2x = 24$$

$$x = 12 \text{ ft.}$$

77. A drawing of a garden uses a scale of 1 in : 3 ft. Find the length of the garden if the length on the drawing is 13 inches.

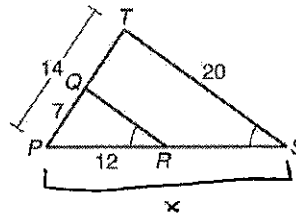
$$\frac{1 \text{ in}}{3 \text{ ft.}} = \frac{13 \text{ inches}}{x \text{ feet.}}$$

$$x = 39 \text{ ft.}$$

78. Two points on k are $(-4, 3)$ and $(2, -1)$. Write a ratio expressing the slope of k .

$$m = \frac{-1-3}{2-(-4)} = \frac{-4}{6} = \boxed{-\frac{2}{3}}$$

79. Find SP.

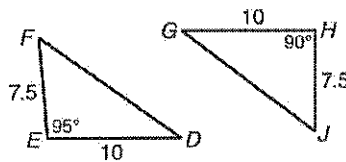


$$\frac{\text{small } \Delta}{\text{large } \Delta} = \frac{7}{14} = \frac{12}{x}$$

$$7x = 168$$

$$x = 24$$

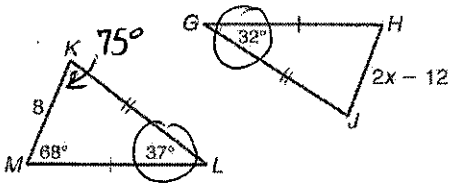
80. Compare FD and GJ.



$$FD > GJ$$

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Use the figures for Exercises 81 and 82.



81. Order the sides of $\triangle KLM$ from smallest to largest.

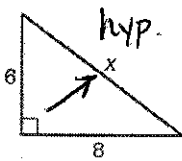
$\overline{KM}, \overline{KL}, \overline{LM}$

82. Find the range of values for x .

$$\begin{array}{r}
 37^\circ > 32^\circ \\
 KM > HJ \\
 8 > 2x - 12 \quad 2x - 12 > 0 \\
 +12 \quad +12 \quad +12 \quad +12 \\
 \hline
 20 > 2x \quad 2x > 12 \\
 10 > x \quad x > 6
 \end{array}$$

$6 < x < 10$

83. Use Pythagorean Theorem to find the value of x .



$$\begin{array}{l}
 \text{hyp.} \\
 a^2 + b^2 = c^2 \\
 6^2 + 8^2 = c^2 \\
 36 + 64 = c^2 \\
 \sqrt{100} = \sqrt{c^2} \\
 \boxed{10 = c}
 \end{array}$$

84. Write *True* or *False*. A right triangle has sides that measure 5, 12, and 13. The side lengths form a Pythagorean triple.

True

85. The measures of the side lengths of a triangle are 9, 12, and 15. Classify the triangle as acute, right, or obtuse.

$$\begin{array}{l}
 9^2 + 12^2 ? 15^2 \\
 81 + 144 ? 225 \\
 225 \text{ (} = \text{)} 225
 \end{array}$$

Right

86. Classify the triangle with side lengths of 16, 7, and 12.

$$\begin{array}{l}
 7^2 + 12^2 ? 16^2 \\
 49 + 144 ? 256 \\
 193 \text{ (} < \text{)} 256 \\
 a^2 + b^2 < c^2
 \end{array}$$

Obtuse.