

Questions on 6.4 HW?

\*Choose your own seat\*

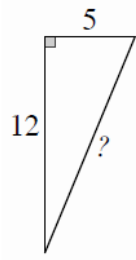
SM2 - Module 6 SE.pdf - Adobe Acrobat Reader DC

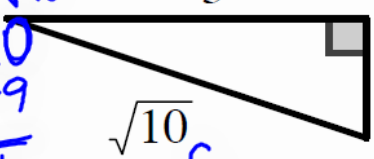
File Edit View Window Help

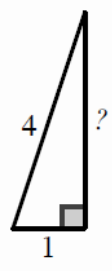
Home Tools SM3H Module 6 - ... SM2 - Module 6 SE... x

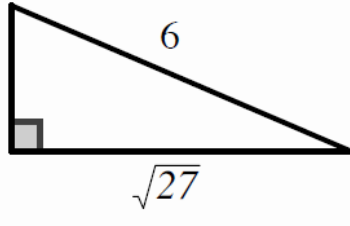
24 / 61 125%

**Find the missing side in each right triangle.  $a^2 + b^2 = c^2 \rightarrow$  Pythagorean Theorem**


1. 


2.   $3^2 + b^2 = \sqrt{10}^2$   
 $9 + b^2 = 10$   
 $-9 \quad -9$   
 $b^2 = 1$   
 $b = 1$

3. 

4. 

**Create a proportion for each set of similar triangles. Then solve the proportion.**

5. 

6. 

8.50 x 11.00 in

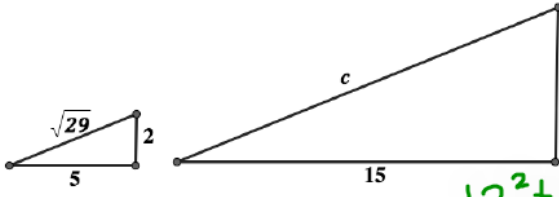
SM2 - Module 6 SE.pdf - Adobe Acrobat Reader DC

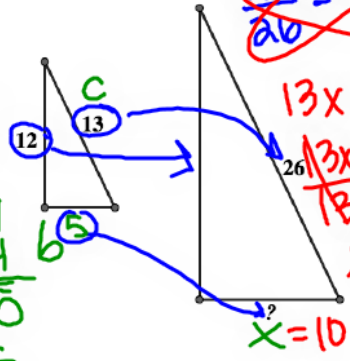
File Edit View Window Help

Home Tools SM3H Module 6 - ... SM2 - Module 6 SE... x

24 / 61 125%

**Create a proportion for each set of similar triangles. Then solve the proportion.**

5. 

6. 

$12^2 + b^2 = 13^2$   
 $144 + b^2 = 169$   
 $-144$   
 $\sqrt{b^2} = \sqrt{25}$   
 $b = 5$

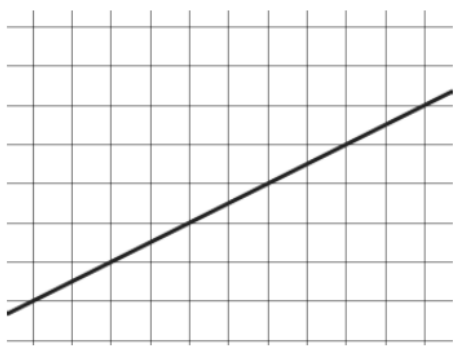
$\frac{13}{26} = \frac{5}{x}$   
 $13x = 5 \cdot 26$   
 $13x = 130$   
 $\frac{13x}{13} = \frac{130}{13}$   
 $x = 10$

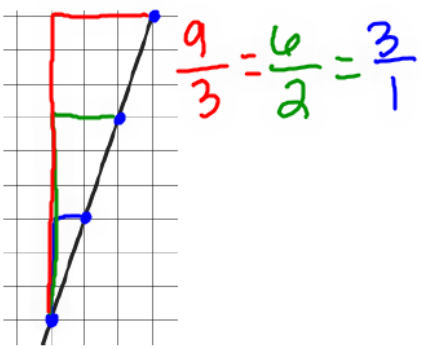
© 2013 MATHEMATICS VISION PROJECT | MVP  
 In partnership with the Utah State Office of Education  
 Licensed under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 Unported license

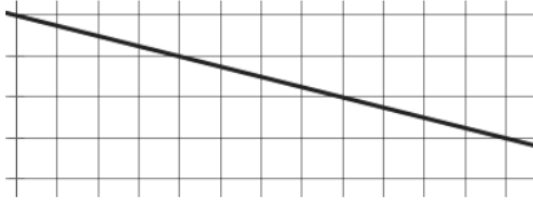
8.50 x 11.00 in

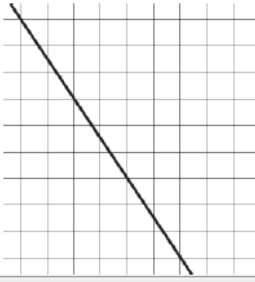
SM2 - Module 6 SE.pdf - Adobe Acrobat Reader DC  
 File Edit View Window Help  
 Home Tools SM3H Module 6 - ... SM2 - Module 6 SE... x  
 26 / 61 125%

**Each line below has several triangles that can be used to determine the slope. Draw in three slope defining triangles of different sizes for each line and then create the ratio of rise to run for each.**

15. 

16.   $\frac{9}{3} = \frac{6}{2} = \frac{3}{1}$

17. 

18. 

8.50 x 11.00 in

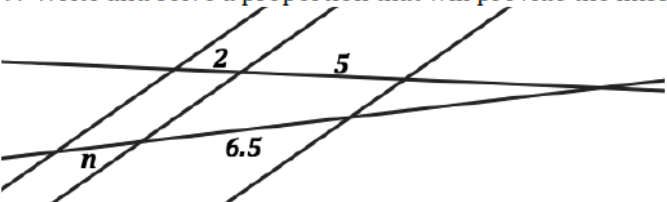
SM2 - Module 6 SE.pdf - Adobe Acrobat Reader DC

File Edit View Window Help

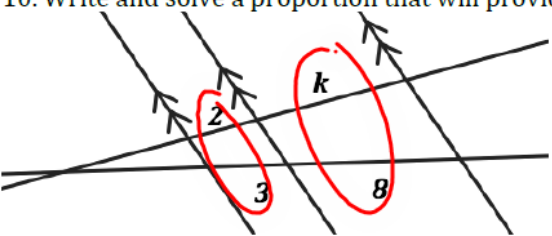
Home Tools SM3H Module 6 - ... SM2 - Module 6 SE... x

25 / 61 125%

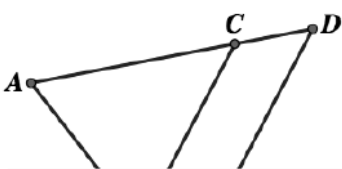
9. Write and solve a proportion that will provide the missing length.




10. Write and solve a proportion that will provide the missing length.



For questions 11 - 14 find and label the parallel lines. (i.e.  $\overline{AB} \parallel \overline{CD}$ ) Then write a similarity statement for the triangles that are similar. (i.e.  $\triangle ABC \sim \triangle XYZ$ )

11. 

12. 

8.50 x 11.00 in

Handwritten work for question 10:

$$\frac{2}{3} = \frac{k}{8}$$

$$2 \cdot 8 = 3k$$

$$16 = 3k$$

$$k = \frac{16}{3} \approx 5.3$$

# 6.5 Measured Reasoning

## A Practice Understanding Task

Find the measures of all missing sides and angles by using geometric reasoning, not rulers and protractors. If you think a measurement is impossible to find, identify what information you are missing.

Lines  $p, q, r,$  and  $s$  are all parallel.



*(Note: The diagram and calculations below are heavily annotated with handwritten work in various colors.)*

**Diagram Description:** A geometric diagram showing a series of horizontal parallel lines labeled  $p, q, r,$  and  $s$ . A diagonal line intersects these parallel lines. Various segments and angles are labeled with handwritten numbers and letters. A right-angled triangle is formed by a vertical segment of length 12 and a horizontal segment of length 9, with a hypotenuse of length 15. Another right-angled triangle is formed by a vertical segment of length 12 and a horizontal segment of length 8, with a hypotenuse of length 14.4. A larger right-angled triangle is formed by a vertical segment of length 37 and a horizontal segment of length 18, with a hypotenuse of length 45. Angles of  $33.7^\circ$  and  $53^\circ$  are indicated. The word "Circumference" is written vertically on the right side of the diagram.

**Handwritten Calculations:**

**Left side:**

$$\frac{15}{10} = \frac{21.6}{x}$$

$$\frac{216}{5} = \frac{15x}{5}$$

$$14.4 = x$$

$$\frac{y}{10} = \frac{15}{10}$$

$$\frac{10y}{10} = \frac{270}{10}$$

$$y = 27$$

**Bottom left:**

$$9^2 + 12^2 = c^2$$

$$81 + 144 = c^2$$

$$225 = c^2$$

$$15 = c$$

**Bottom middle:**

$$14.4^2 = 12^2 + b^2$$

$$207.36 = 144 + b^2$$

$$\frac{144}{8} = \frac{82}{8}$$

$$18 = z$$

$$8 \times 7.95 = b$$

**Right side:**

$$\frac{5}{a+5} = \frac{4}{16}$$

$$5 \cdot 16 = 4(a+5)$$

$$80 = 4a + 20$$

$$-20 \quad -20$$

$$\frac{60}{4} = \frac{4a}{4}$$

$$15 = a$$

**Bottom right:**

$$\frac{12}{8} = \frac{w}{14.4}$$

$$\frac{8w}{8} = \frac{112.9}{8}$$

$$w = 21.6$$

1. Identify at least three different quadrilaterals in the diagram. Find the sum of the interior angles for each quadrilateral. Make a conjecture about the sum of the interior angles of a quadrilateral.

$$= 53 + 33.7 + 90 + 56.3 + 90 + 37 = 360^\circ$$

Conjecture: Interior  $\angle$ s sum to  $360^\circ$ .

2. Identify at least three different pentagons in the diagram. Find the sum of the interior angles for each pentagon. Make a conjecture about the sum of the interior angles of a pentagon.

$$= 90 + 90 + 90 + 90 + 33.7 + 93.3 + 53 = 540^\circ$$

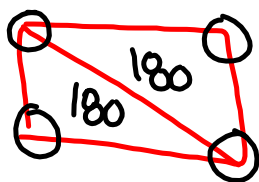
Conjecture: Interior  $\angle$ s sum to  $540^\circ$ .

3. Do you see a pattern in the sum of the angles of a polygon as the number of sides increases?  
How can you describe this pattern symbolically?

$$n = \# \text{ of sides}$$

$$180(n-2)$$

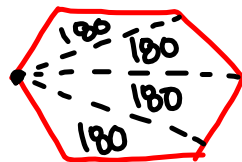
4. How can you convince yourself that this pattern holds for all  $n$ -gons?



4 sides  
2  $\Delta$ s  
2(180)  
360



5 sides  
3  $\Delta$ s  
3(180)  
540



6 sides  
4  $\Delta$ s  
4(180)  
720

7 sides  
5  $\Delta$ s

Homework

Finish 6.5 "Ready, Set, Go"