GSE Geometry | Unit 3 - Similarity and Right Triangles | Review Guide

Name _____ Date _____

UNIT 3 TEST REVIEW

Similar Triangles:

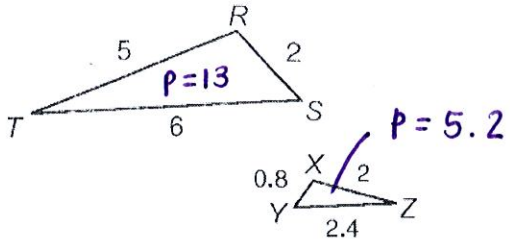
1) In the figure, $\Delta RST \sim \Delta XYZ$.

a) Find the scale factor of ΔRST to ΔXYZ. old / new $\frac{2}{5}$

new / old

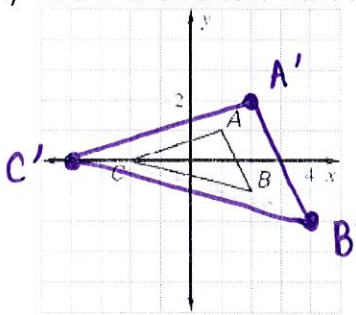
b) Find the perimeter of both triangles. What is the ratio of the perimeters of the 2 triangles?

$\frac{5.2}{13} = \frac{2}{5}$



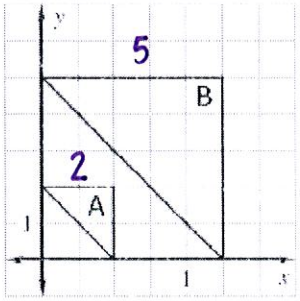
2) Dilations:

a) Draw a dilation with k = 2



A(1, 1) A'(2, 2)
B(2, -1) B'(4, -2)
C(-2, 0) C'(-4, 0)

b) Determine the scale factor, k = ____

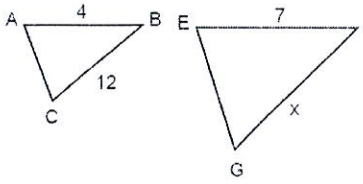


A → B = 5/2

B → A = 2/5

3) Find the length of the missing side(s).

a)

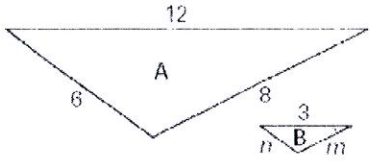


$\frac{4}{7} = \frac{12}{x}$

$4x = 84$

$x = 21$

b)



$\frac{12}{3} \times \frac{6}{n}$

$12n = 18$

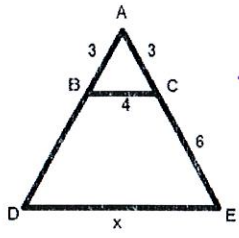
$n = 1.5$

$\frac{12}{3} \times \frac{8}{m}$

$12m = 24$

$m = 3$

c)

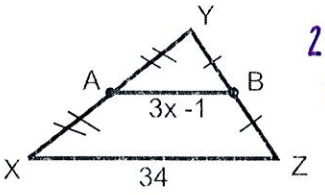


$\frac{3}{4} = \frac{9}{x}$

$3x = 36$

$x = 12$

d)



$2(3x - 1) = 34$

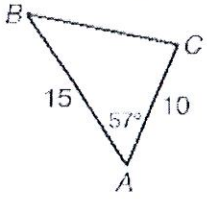
$6x - 2 = 34$

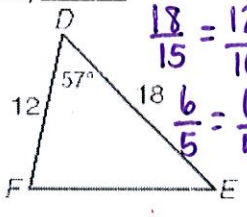
$6x = 36$

$x = 6$ | $AB = 17$

4) Determine if the following triangles are similar. If so, give the postulate and similarity statement.

a) $\Delta ABC \sim$ ΔDEF by SAS~

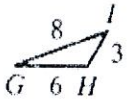


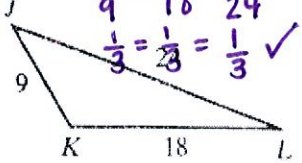


$\frac{18}{15} = \frac{12}{10}$

$\frac{6}{5} = \frac{6}{5}$ ✓

b) $\Delta GHI \sim$ ΔLKJ by SSS~

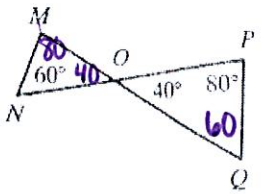




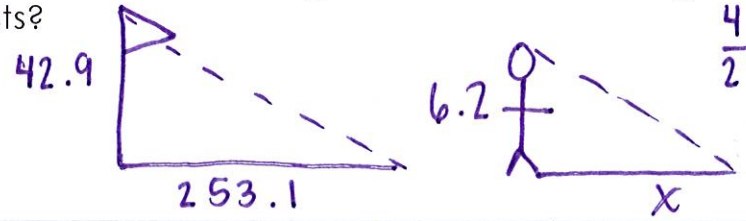
$\frac{3}{9} = \frac{6}{18} = \frac{8}{24}$

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

c) $\Delta MNO \sim$ ΔPQO by AA~



5) If a 42.9 ft tall flagpole casts a 253.1 ft long shadow, then how long is the shadow that a 6.2 ft. tall woman casts?



$\frac{42.9}{253.1} = \frac{6.2}{x}$

$42.9x = 1569.22$

$x = 36.6$ ft

SOHCAHTOA:

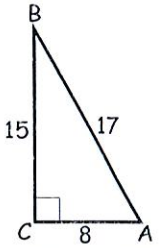
6) a) Find the 3 trig ratios from Angle A and Angle B.

$\sin A = 15/17$ $\cos A = 8/17$ $\tan A = 15/8$

$\sin B = 8/17$ $\cos B = 15/17$ $\tan B = 8/15$

b) How do the ratios compare for the two angles?

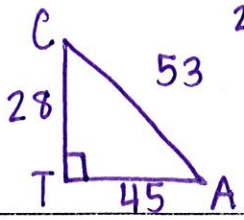
$\sin A = \cos B$, $\cos A = \sin B$, $\tan A = \frac{1}{\tan B}$



7) **Draw ΔCAT where $\angle ATC = 90°$, CA = 53, and CT = 28.**

a) What is the length of AT? 45

b) What is sin C? 45/53 c) What is tan A? 28/45



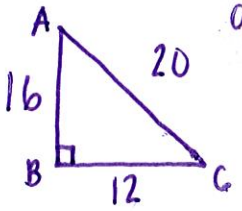
$28^2 + b^2 = 53^2$

$b = 45$

8) **Draw ΔABC where $\angle B = 90°$ and $\sin A = \frac{12}{20}$.**

a) What is the length of AB? 16

b) What is tan A? 12/16 = 3/4 c) What is cos A? 16/20 = 4/5



$a^2 + 12^2 = 20^2$

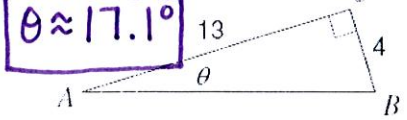
$a = 16$

9) Solve for the missing side or angle using Trig Ratios (sin, cos, tan).

a) $\tan\theta = 4/13$

$\tan^{-1}(4/13) = \theta$

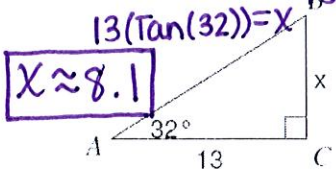
$\theta \approx 17.1°$



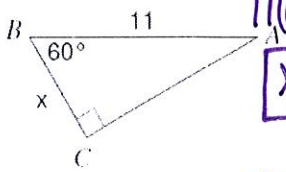
b) $\tan(32) = \frac{x}{13}$

$13(\tan(32)) = x$

$x \approx 8.1$



c)



$\cos(60) = \frac{x}{11}$

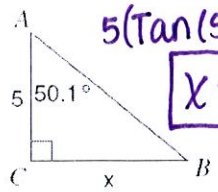
$11(\cos(60)) = x$

$x = 5.5$

d) $\tan(50.1) = \frac{x}{5}$

$5(\tan(50.1)) = x$

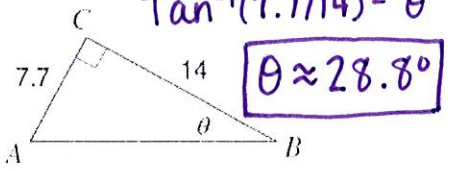
$x \approx 6$



e) $\tan\theta = \frac{7.7}{14}$

$\tan^{-1}(7.7/14) = \theta$

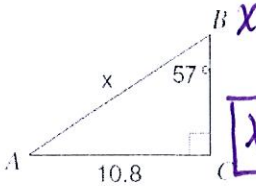
$\theta \approx 28.8°$



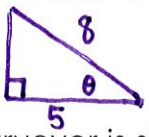
f) $\sin(57) = \frac{10.8}{x}$

$x = \frac{10.8}{\sin(57)}$

$x \approx 12.9$



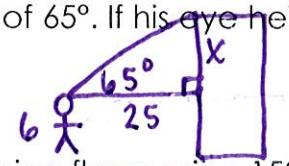
10) An 8 foot ladder is leaning against a wall so that the base is 5 feet from the base of the wall. What angle does the ladder make with the ground? Round to the nearest tenth.



$\cos\theta = \frac{5}{8}$ $\theta = \cos^{-1}(5/8)$

$\theta \approx 51.3°$

11) A surveyor is standing 25 ft from a building and is looking at the top with an angle of elevation of 65°. If his eye height is 6 ft, how tall is the building? Round to the nearest tenth.



$\tan(65) = \frac{x}{25}$

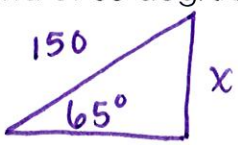
$25(\tan(65)) = x$

$x \approx 53.6$

building $= 53.6 + 6 = 59.6$

59.6 ft

12) A kite is being flown using 150 yards of string. The kite has an angle of elevation with the ground of 65 degrees. How high above the ground is the kite?



$\sin(65) = \frac{x}{150}$

$150(\sin(65)) = x$

$x \approx 135.9$