Integrated Math 2
Key Concept 7 REVIEW

Name: Inked Copy
Period: _____

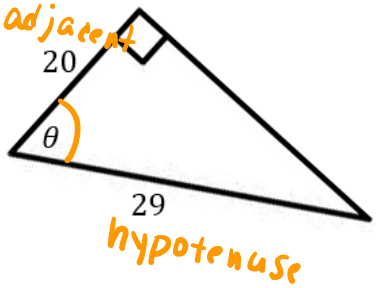
Target 7D: Use trigonometry to solve for missing sides and angles of right triangles.

16. Solve for θ. Round your answer to the nearest tenth. (1 point)

$\cos\theta = \frac{adj}{hyp}$

$\cos\theta = \frac{20}{29}$

$\cos^{-1}\left(\frac{20}{29}\right) = \theta$ (put in calc!) $\rightarrow \theta = 46.4°$

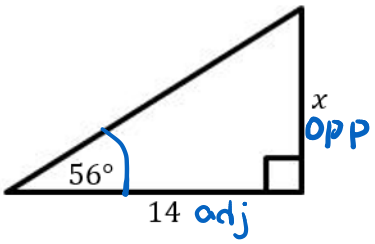


17. Solve for x. Round your answer to the nearest tenth. (1 point)

$\frac{\tan 56°}{1} = \frac{x}{14}$

$14 \cdot \tan 56° = x$ (calc!)

$20.8 = x$



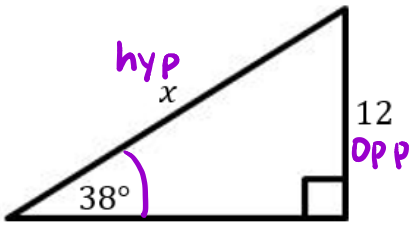
18. Solve for x. Round your answer to the nearest tenth. (1 point)

$\frac{\sin 38°}{1} = \frac{12}{x}$

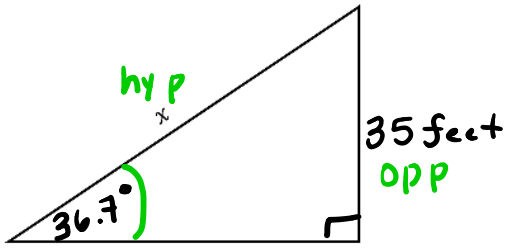
$x \cdot \sin 38° = 12$ (calc!)

$\frac{x \cdot \sin 38°}{\sin 38°} = \frac{12}{\sin 38°}$

$x = 19.5$



19. A skateboard ramp at a local park has an angle of elevation of 36.7°. The height of the ramp is 35 feet. How long is the ramp? Sketch a diagram (with units) and solve. Round your answer to the nearest hundredth. (3 points)



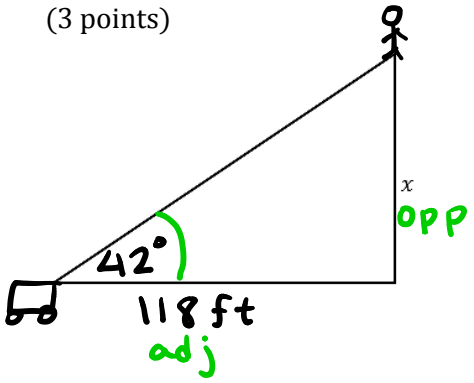
$\frac{\sin 36.7°}{1} = \frac{35}{x}$

$x \cdot \sin 36.7° = 35$ (calc!)

$\frac{x \cdot \sin 36.7°}{\sin 36.7} = \frac{35}{\sin 36.7}$

$x = 58.57$ feet

20. A fireman is standing at the edge of a building looking down into the city and sees an ambulance 118 feet from the base of the building. The angle of depression of the fireman to the ambulance is 42°. How high is the building in feet? Sketch a diagram (with units) and solve. Round your answer to the nearest hundredth. (3 points)



$\frac{\tan 42°}{1} = \frac{x}{118}$

$118 \cdot \tan 42° = x$ (calc!)

$106.25 \text{ ft} = x$

Target 7E: Solve right triangles by finding the measures of all sides and angles.

Use ΔJKL to answer questions 21, 22, and 23.

21. Solve for $\angle L$: (1 point)

$180 - 90 - 64 = 26°$

22. Solve for $\overline{JK}$: (1 point)

$\frac{\tan 64°}{1} = \frac{16}{JK}$

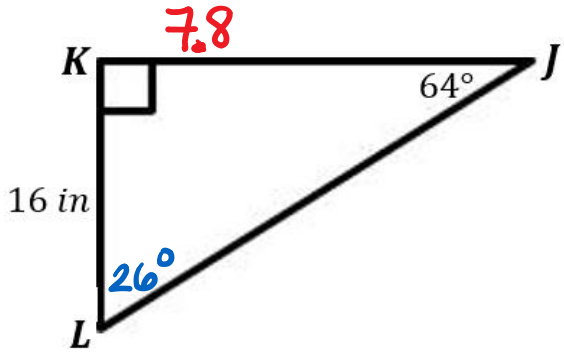
$JK \cdot \tan 64° = \frac{16}{\tan 64°}$ (calc!) $JK = 7.8$ in

23. Solve for $\overline{JL}$: (1 point)

$16^2 + 7.8^2 = (JL)^2$

$\sqrt{316.84} = \sqrt{(JL)^2}$

$17.8 \text{ in} = JL$



24. Three students were asked to find the value of x in the figure. The equations they used are shown at right. Which students, if any, used a correct equation? Explain how you could fix the errors students made. Find the value of x. (3 points)

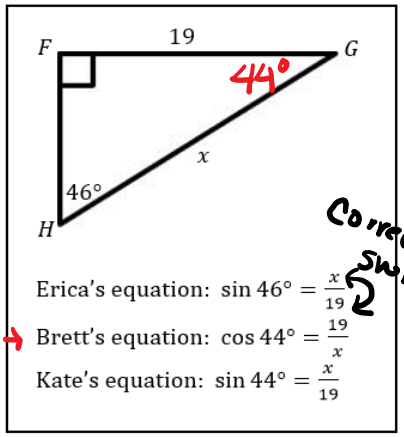
$\frac{\cos 44°}{1} = \frac{19}{x}$

$x \cdot \cos 44° = \frac{19}{\cos 44}$ (calc!)

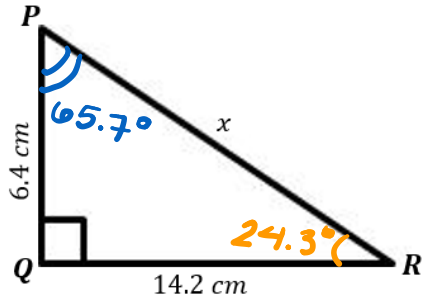
$x = 26.41$

★Correct Erica: $\sin 46° = \frac{19}{x}$

★Correct Kate: Pick different angle b/c we don't know the opposite side of 44°.



25. Solve ΔPQR to find all missing angles and sides. Round your answers to the nearest tenth. (3 points)



side x: $6.4^2 + 14.2^2 = x^2$

$\sqrt{242.6} = \sqrt{x^2}$

$15.6 = x$

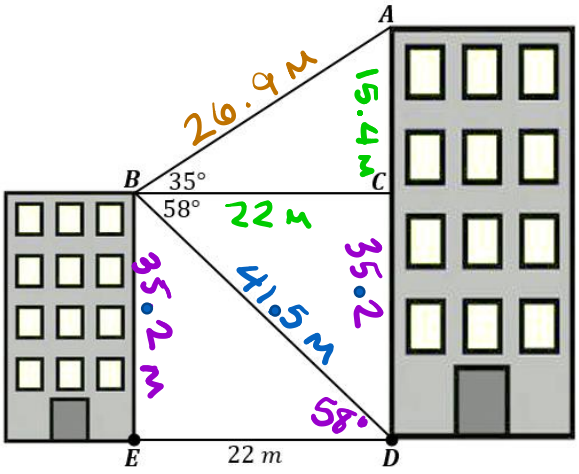
$\angle R$: $\tan^{-1}\left(\frac{6.4}{14.2}\right) \Rightarrow 24.3°$

calc!

$\angle P$: $180 - 90 - 24.3 = 65.7°$

ADVANCED (10 possible points)

Two students want to determine the heights of two buildings. They stand on the roof of the shorter building. The students use a clinometer to measure the angle of elevation of the top of the taller building. The angle is 35°. From the same position, the students measure the angle of depression of the base of the taller building. The angle is 58°. The students then measure the horizontal distance between the two buildings. The distance is 22 meters. The students drew this diagram.



1. Determine the height of the shorter building. (2 points)

$\frac{\tan 58°}{1} = \frac{BE}{22}$

$22 \cdot \tan 58° = BE$

calc!

35.2 meters = BE

2. Determine the height of the taller building. (3 points)

$\frac{\tan 35°}{1} = \frac{AC}{22}$

$22 \cdot \tan 35° = AC$

calc!

15.4 M = AC

$AD = AC + CD$

$= 15.4 + 35.2$

$AD =$ 50.6 meters

3. What is the distance between the rooftops? (2 points)

$15.4^2 + 22^2 = (AB)^2$

$\sqrt{721.16} = \sqrt{(AB)^2}$

26.9 meters = AB

4. What is the distance between the buildings? (1 point)

22 m (given)

5. What is the distance between the base of the taller building to the rooftop of the shorter building? (2 points)

$22^2 + 35.2^2 = (BD)^2$

$\sqrt{1723.04} = \sqrt{(BD)^2}$

41.5 meters $= BD$