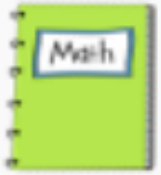
Objective: The students will complete assignment Study Guide Exam-5: Trigonometry with Right Triangles and will demonstrate their understanding with an accuracy rate of 70% or higher on Exam-5 tomorrow.*

Standards | G-SRT. Define trigonometric ratios and solve problems involving right triangles.

WHAT DO YOU NEED?

Mathematics II

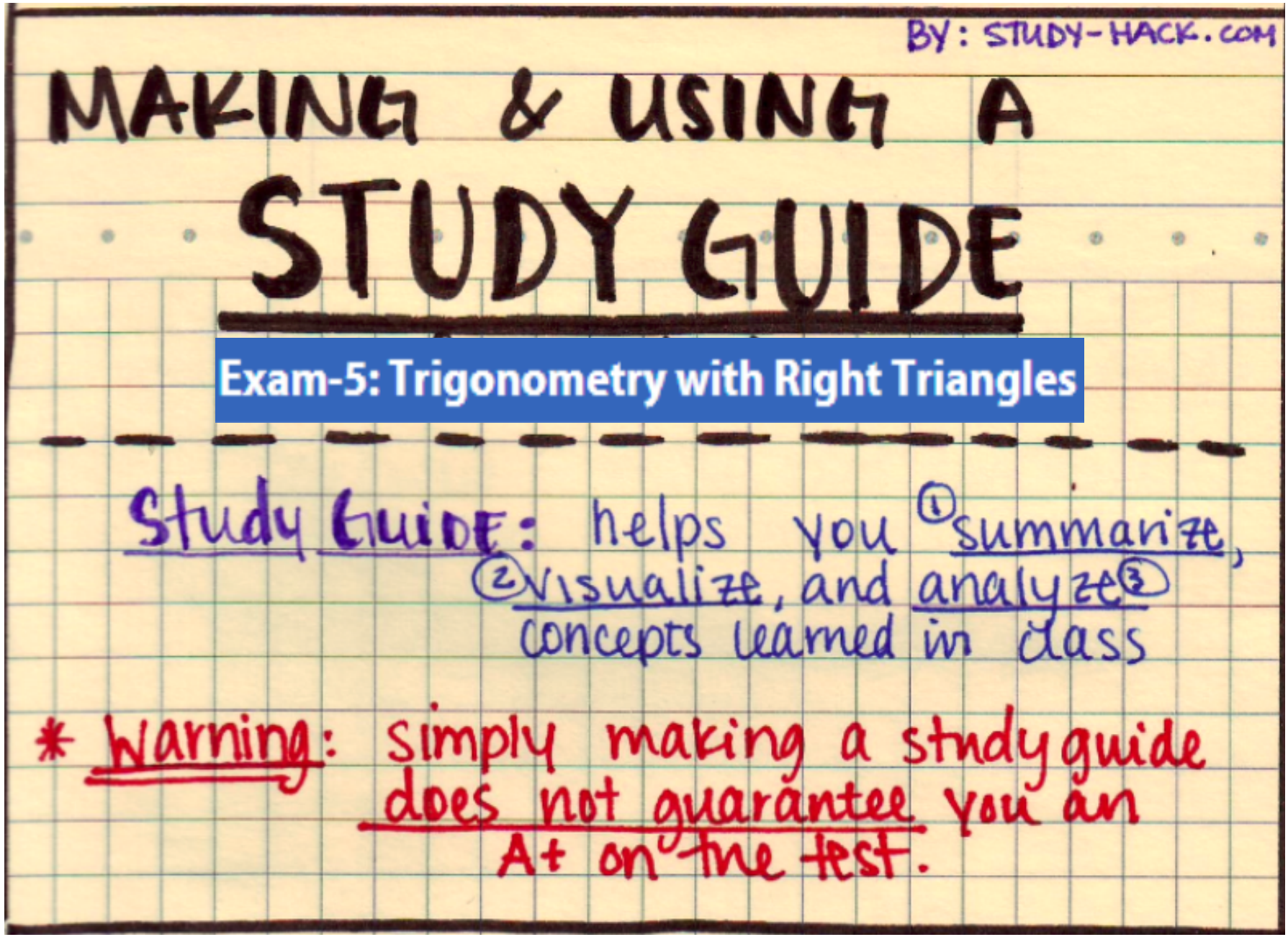
- A working Chromebook
- Math Notebook

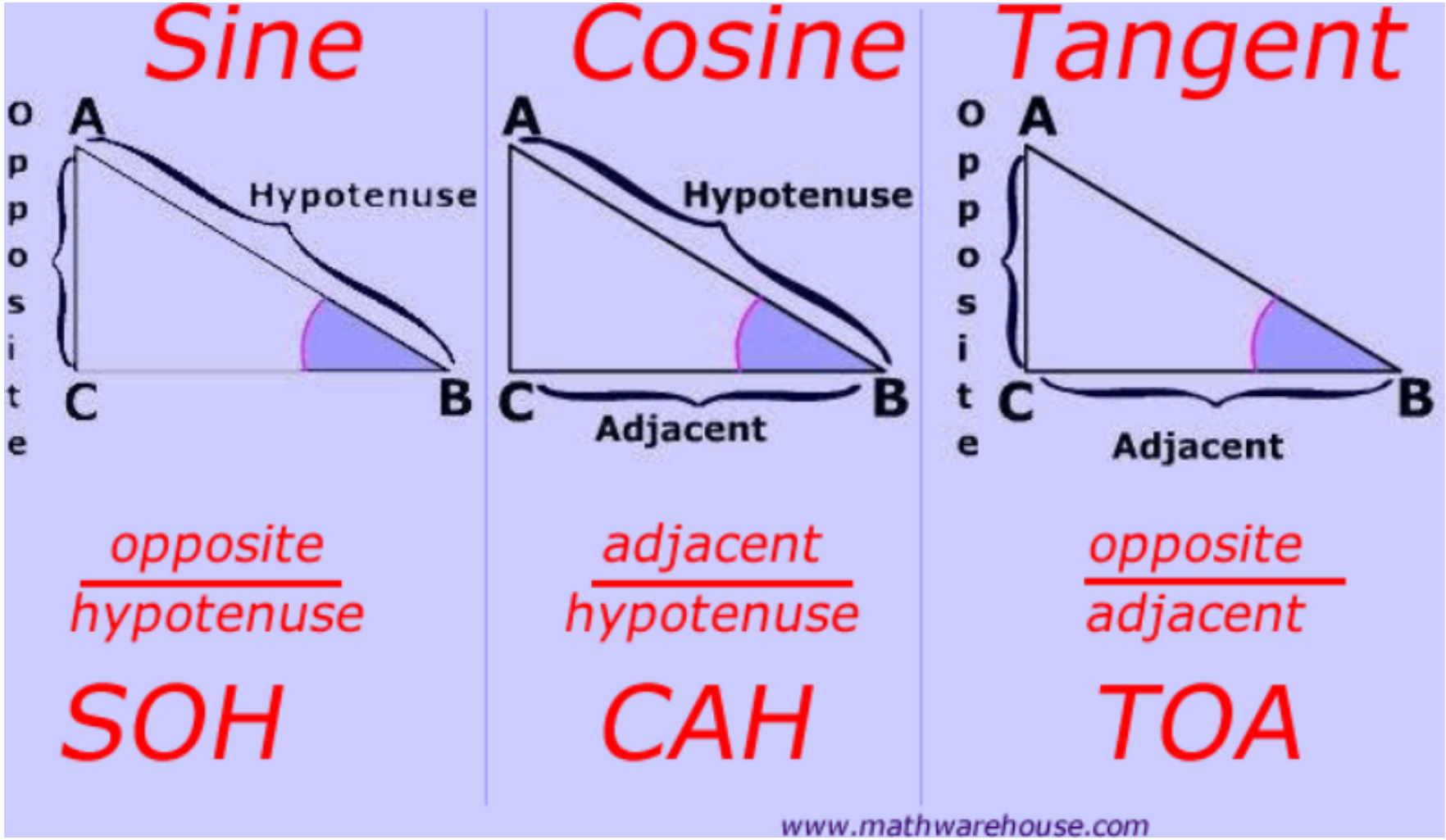


- Study Guide Exam-5: Trigonometry with Right Triangles
- TURN IN LATE OR MISSING WORK

*If accuracy of 70% or higher is not achieved, the student(s) will be required to retake it.

EDI Lesson Plan Template for TEACHER-CREATED lessons.


BY: STUDY-HACK.COM
MAKING & USING A
STUDY GUIDE
Exam-5: Trigonometry with Right Triangles
Study Guide: helps you ① summarize, ② visualize, and analyze ③ concepts learned in class
* Warning: simply making a study guide does not guarantee you an A+ on the test.


Sine
Cosine
Tangent
opposite
A
C
B
Hypotenuse
Adjacent
opposite / hypotenuse
adjacent / hypotenuse
opposite / adjacent
SOH
CAH
TOA
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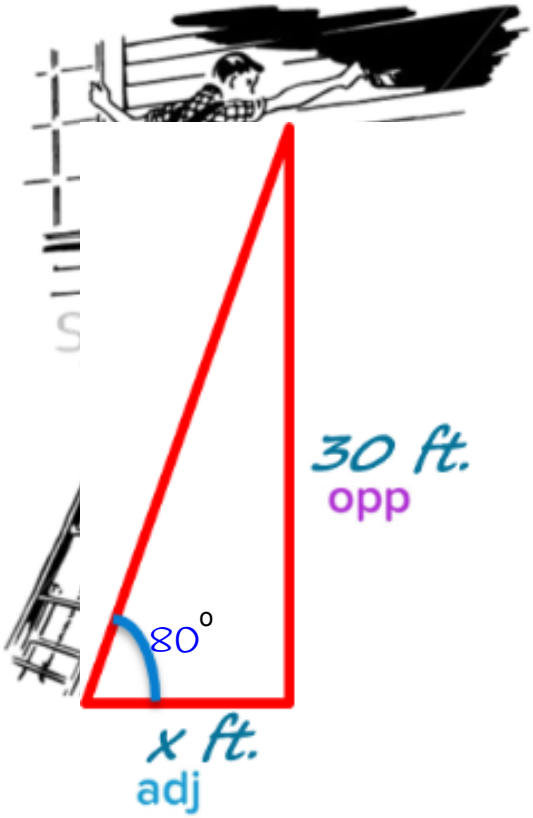
A painter is placing a ladder to reach the third story window, which is 30 feet above the ground and makes an angle with the ground of 80°.

How far out from the building does the base of the ladder need to be positioned? Round your answer to the nearest tenth.

The base of the ladder needs to be positioned **5.3** feet out from the building.



$$\tan 80° = \frac{30}{x}$$

*switch tan with x

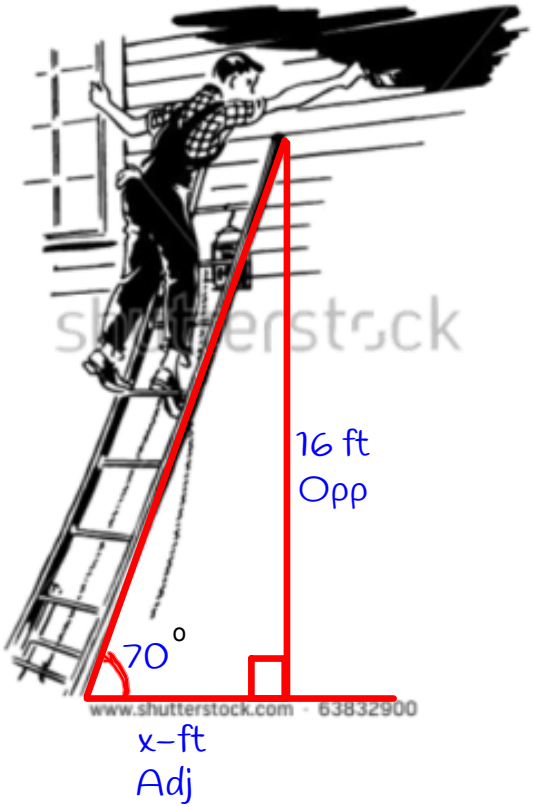
$$x = \frac{30}{\tan 80°}$$

$$x = 5.2898$$

$$x \approx 5.3$$

2 A ladder needs to reach a second-story window that is 16 feet above the ground and make an angle with the ground of 70°. How far out from the building does the base of the ladder need to be positioned? Round your answer to the nearest tenth.

The base of the ladder needs to be **5.8** feet away from the wall.

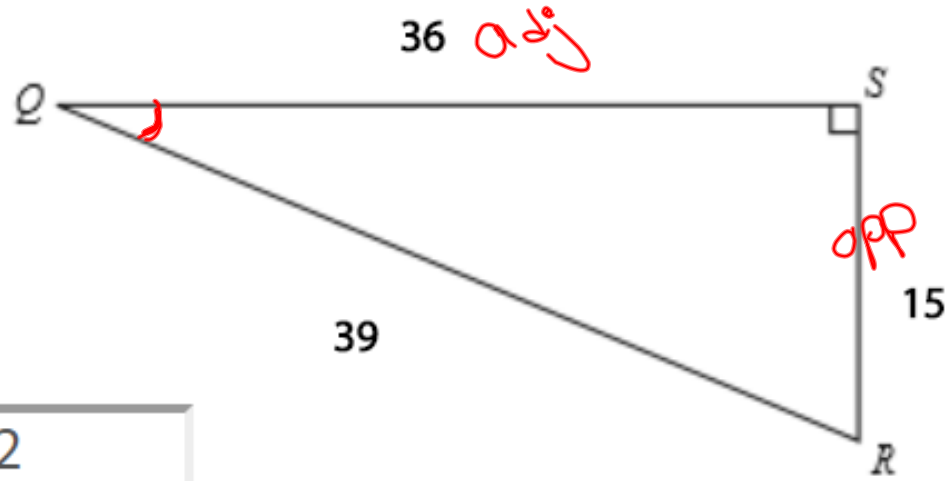


$$\tan 70^\circ = \frac{16}{x}$$

$$x = \frac{16}{\tan 70^\circ}$$

$$\approx 5.8$$ Evaluate. Round to the nearest tenth.

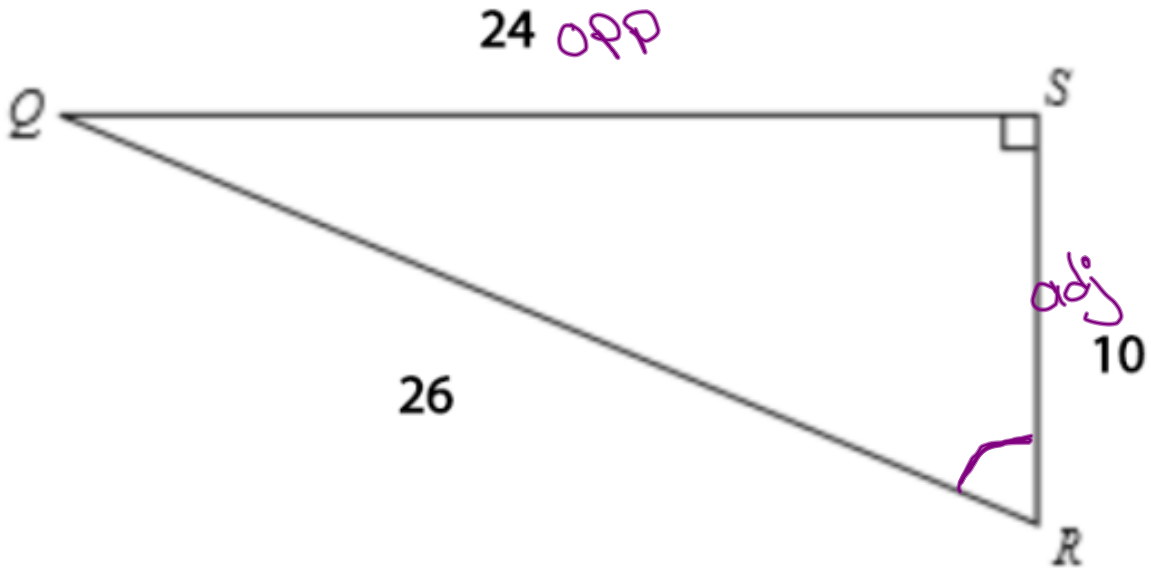
3 Find the tangent of ∠Q. Enter the ratio as a fraction in reduced form and as a decimal rounded to the nearest hundredth.



$\tan \angle Q = \frac{5}{12} \approx 0.42$

Reduce. $\frac{15 \div 3}{36 \div 3} = \frac{5}{12}$

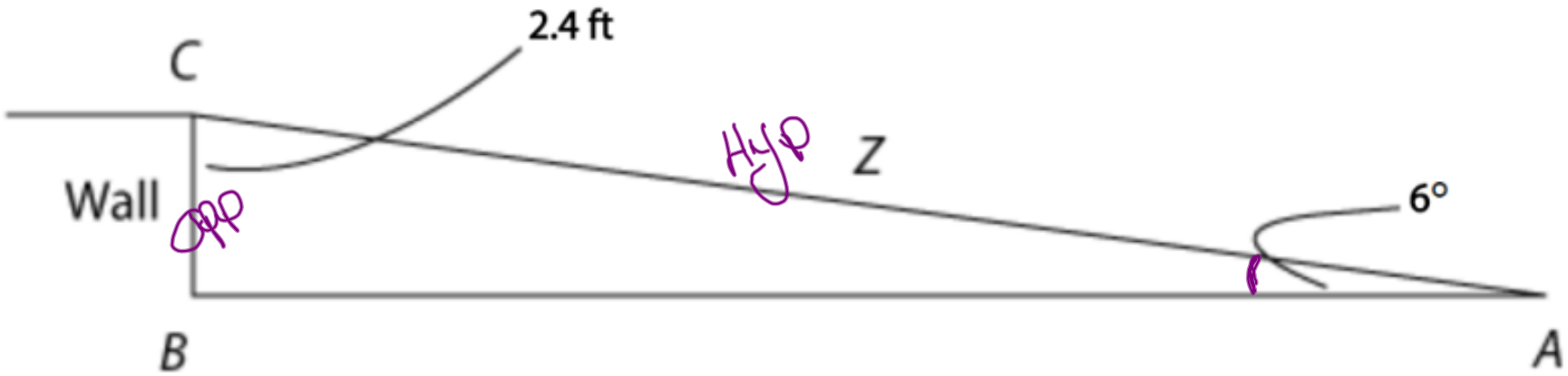
4 Find the tangent of ∠Q. Enter the ratio as a fraction in reduced form and as a decimal rounded to the nearest hundredth.



$\tan \angle R =$ $\frac{12}{5}$ $\approx$ 2.40

Reduce. $\frac{24}{10} \div 2 = \frac{12}{5}$

5 Suppose a new regulation states that the maximum angle of a ramp for wheelchairs is 6°. At least how long must the new ramp be? Round to the nearest tenth of a foot.



The ramp must be at least 23.0 **ft long.**

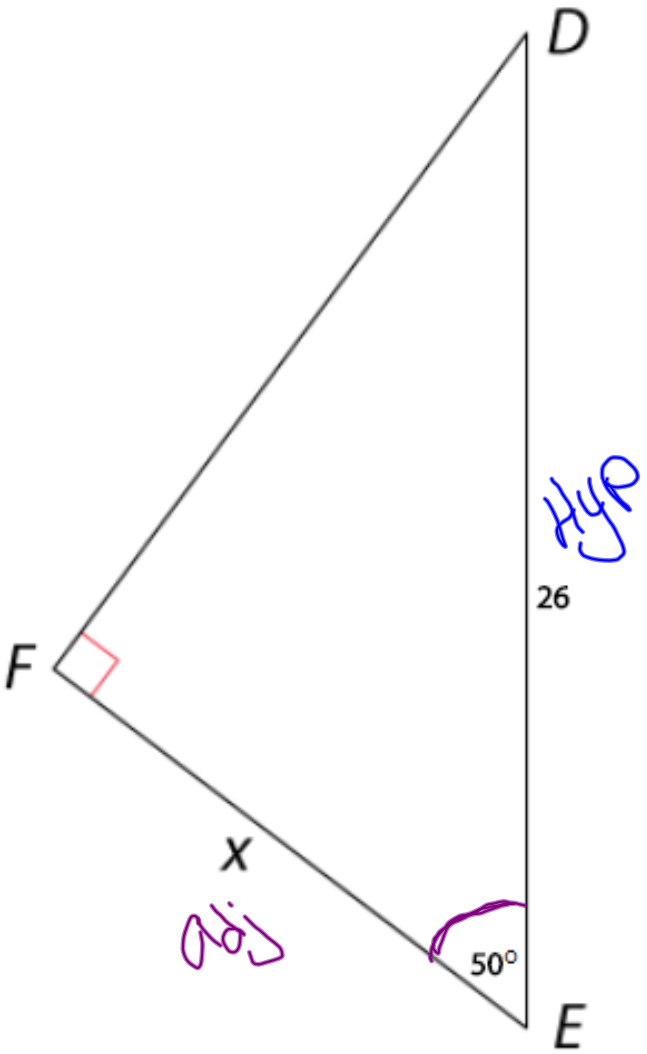
$$\sin A = \frac{BC}{AC}$$

$$\sin 6° = \frac{2.4}{z}$$

$z = 22.96025$

$$z \approx \frac{2.4}{\sin 6°} \approx 23.0$$

6 Find the unknown length x in the right triangle, to the nearest tenth.



$$\cos E = \frac{EF}{DE}$$

$$26 \cdot \cos 50^\circ = \frac{x}{26} \cdot 26$$

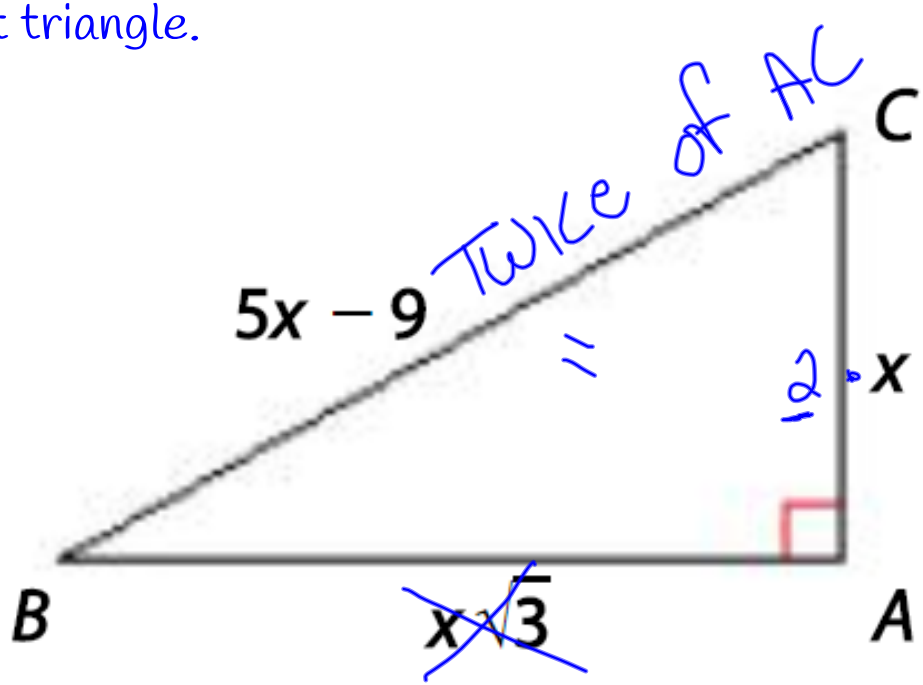
$$26\cos 50^\circ = x$$

$$x \approx 16.7$$

$x \approx$ 16.7

7 Find the value of x in the right triangle.

$$\begin{aligned} BC &= 2AC \\ 5x - 9 &= 2x \\ 3x &= 9 \\ x &= 3 \end{aligned}$$



$x =$ 3

$\triangle ABC$ is a 30°-60°-90°

8 Find the value of x in the right triangle.

$$JK = JL$$

$$\frac{x}{2} = (5x - 45)$$

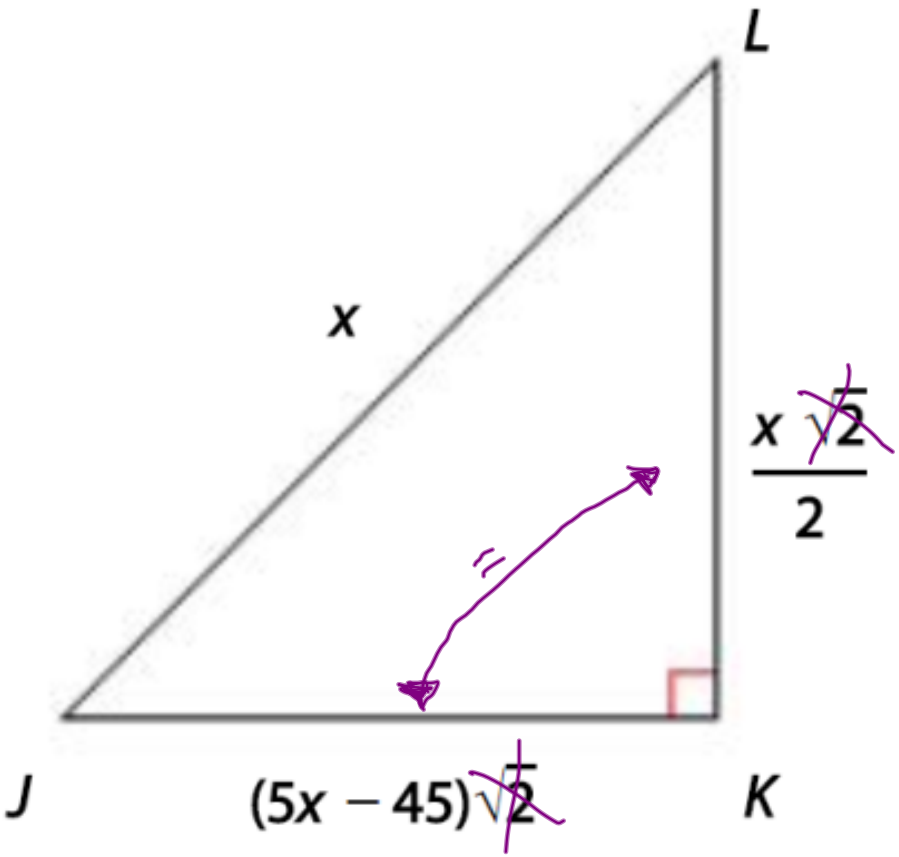
$$x = 2(5x - 45)$$

$$x = 10x - 90$$

$$90 = 9x$$

$$10 = x$$

The value of x is 10.



9 Use trigonometric ratios to solve the right triangle.

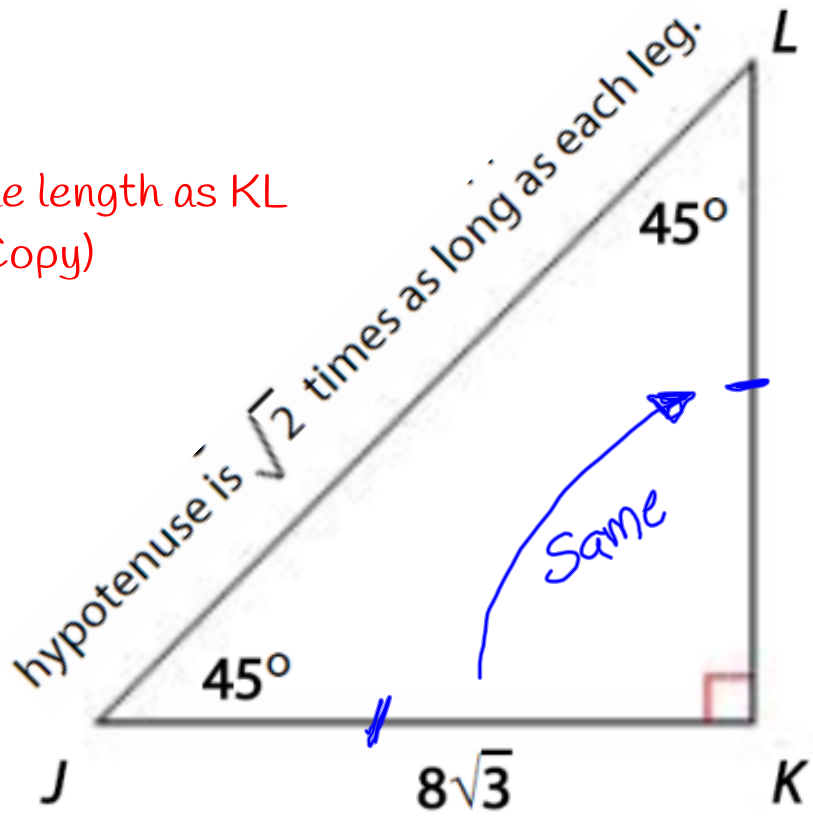
The length of hypotenuse JL is $8\sqrt{6}$.

The length of leg KL is $8\sqrt{3}$ *JK is same length as KL (Copy)

JL = $(8\sqrt{3})\sqrt{2}$

Same

$8\sqrt{6}$

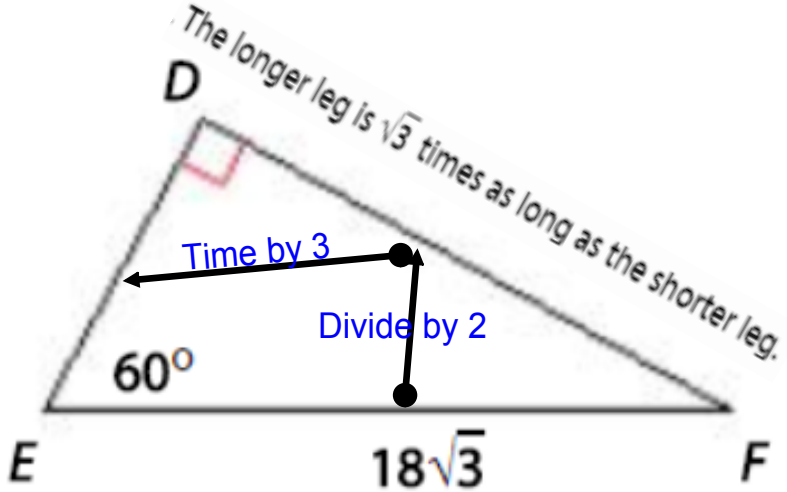


10 Use trigonometric ratios to solve the right triangle.

The length of leg *DF* is 27 .

Time by 3

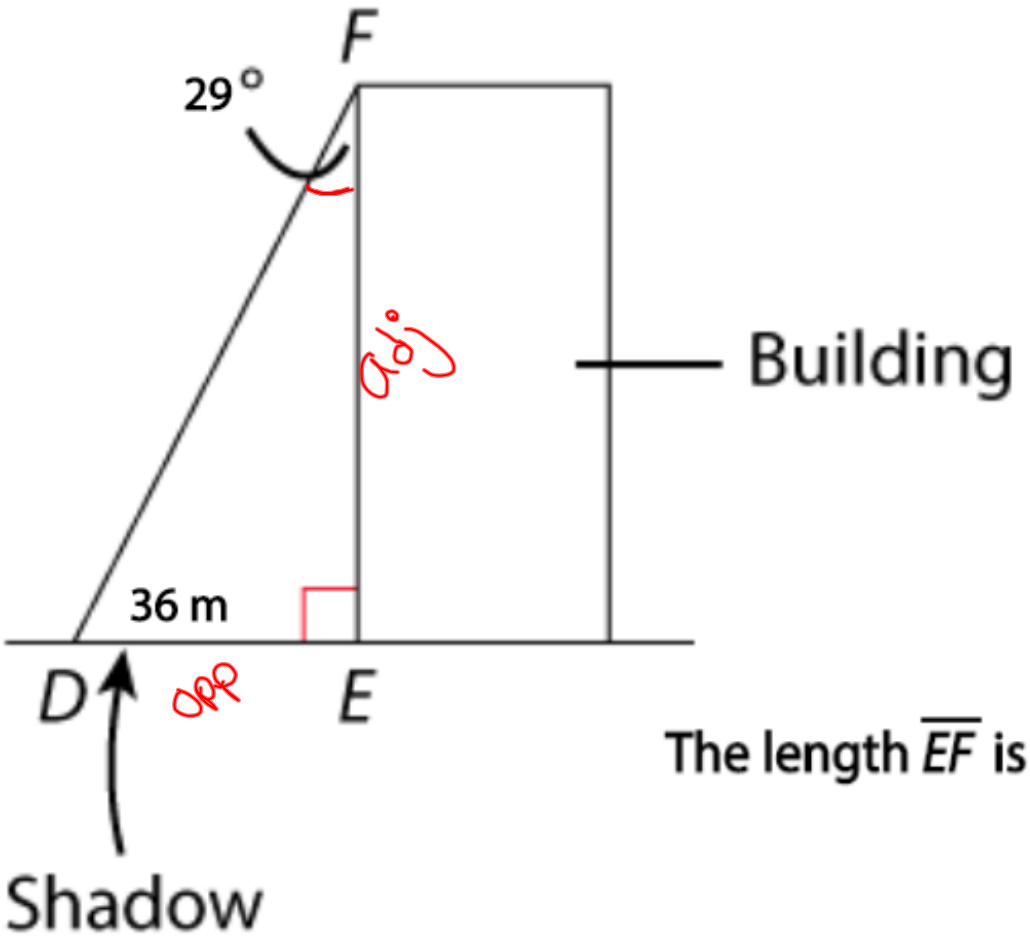
The length of leg *DE* is $9\sqrt{3}$.



The hypotenuse is twice as long as the shorter leg.

11 Use a trigonometric ratio to find the distance EF.

A building casts a 36 m shadow when the Sun is at an angle of 29° to the vertical. How tall is the the building, to the nearest meter? Use a trigonometric ratio to find the distance FE.



$$\tan F = \frac{DE}{EF}$$

$$\tan 29° = \frac{36}{EF}$$

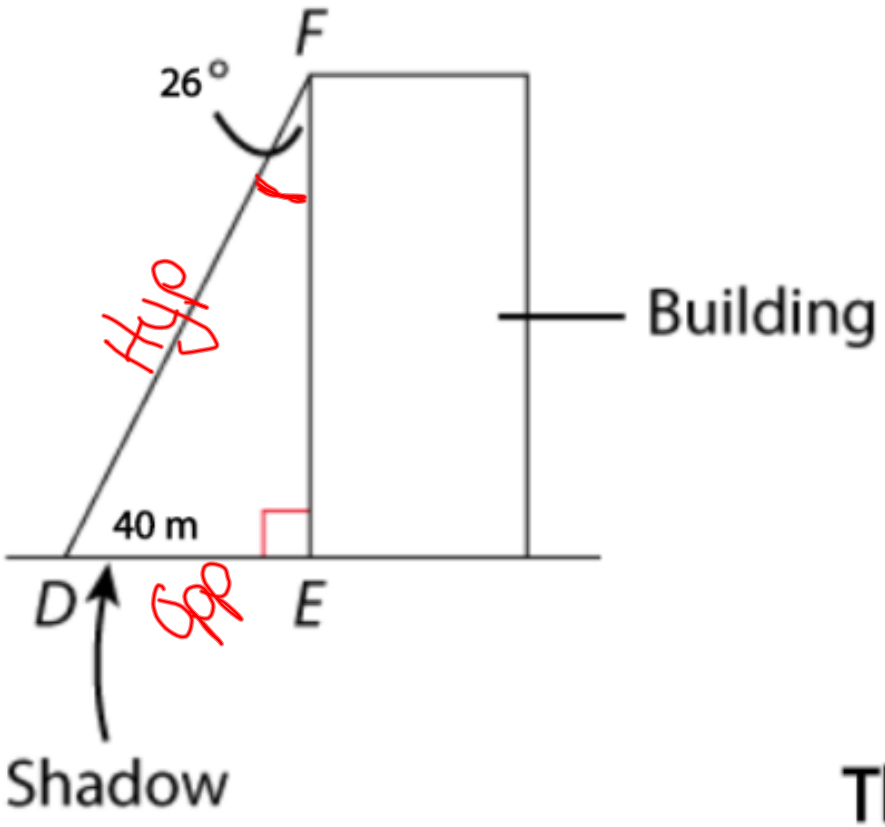
$$EF = \frac{36}{\tan 29°}$$

$$EF \approx 65 \text{ m}$$

The length $\overline{EF}$ is approximately 65 m.

12 Use a trigonometric ratio to find the distance DF. Round your answer to the nearest integer.

A building casts a 40 m shadow when the Sun is at an angle of 26° to the vertical. How far is it from the top of the building to the tip of the shadow to the nearest meter? Use a trigonometric ratio to find the distance DF.



$$\sin F = \frac{DE}{DF}$$

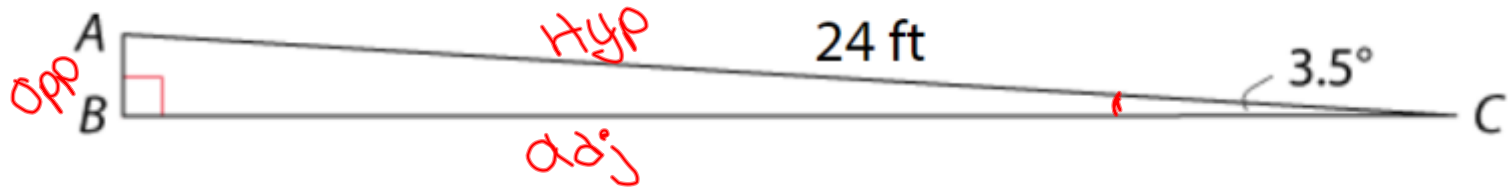
$$\sin 26° = \frac{40}{DF}$$

$$DF = \frac{40}{\sin 26°}$$

$$DF \approx 91 \text{ m}$$

The distance *DF* is 91 m.

13 For safety, the angle a wheelchair ramp makes with the horizontal should be no more than 3.5°. What is the maximum height of a ramp of length 24 ft? What distance along the ground would this ramp cover? Round to the nearest tenth of a foot.



$$\sin C = \frac{AB}{AC} \qquad \cos C = \frac{BC}{AC}$$

$$\sin 3.5^\circ = \frac{AB}{24} \qquad \cos 3.5^\circ = \frac{BC}{24}$$

$$AB = 24 \sin 3.5^\circ \qquad BC = 24 \cos 3.5^\circ$$

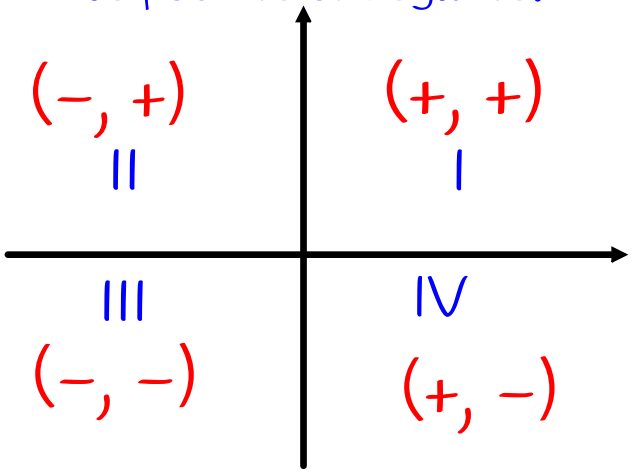
$$AB \approx 1.5 \text{ ft} \qquad BC \approx 24 \text{ ft}$$

The maximum height of the ramp is 1.5 ft.

The maximum length of the ramp is 24 ft.

14 Given the trigonometric function and the location of the terminal side of the angle, drag and drop each function description into the correct box to describe whether the function values will be positive or negative.

(Cos x, Sin y)



$\text{Tan} = \frac{\text{Sin } y}{\text{Cos } x}$

−/+ = −

−/− = +

+/+ = +

Positive	Negative
tanθ , Quadrant III	tanθ , Quadrant II
cosθ , Quadrant I	sinθ , Quadrant IV
	sinθ , Quadrant III

15 **Find the complementary angle to 42°.**

The complementary angle is 48 °.

Let the complementary angle be x.

$$x + 42^\circ = 90^\circ$$

$$x = 90^\circ - 42^\circ$$

$$x = 48^\circ$$

The complementary angle is 48°.


Never say,
"I can't"
Always say,
"I'll try"