Name _____
Date _____ Period ____

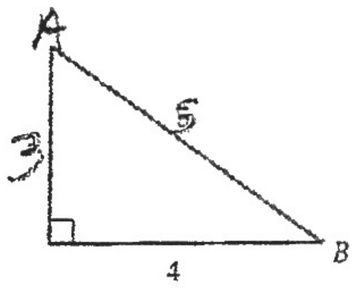
$$\sin\angle = \frac{\text{opposite}}{\text{hypotenuse}} \quad \text{SOH}$$

$$\cos\angle = \frac{\text{adjacent}}{\text{hypotenuse}} \quad \text{CAH}$$

$$\tan\angle = \frac{\text{opposite}}{\text{adjacent}} \quad \text{TOA}$$

Find the sin, cosine, and tangent ratios of $\angle A$ and $\angle B$.

SOH-CAH-TOA



S = O/H sin A = ____ sin B = ____

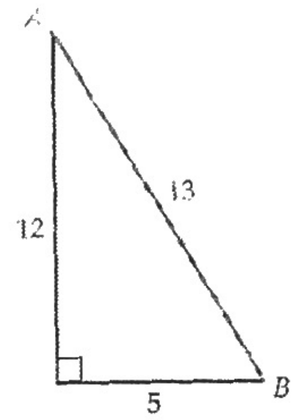
C = A/H cos A = ____ cos B = ____

T = O/A tan A = ____ tan B = ____

#5

Find the sin, cosine, and tangent ratios of $\angle A$ and $\angle B$.

SOH-CAH-TOA



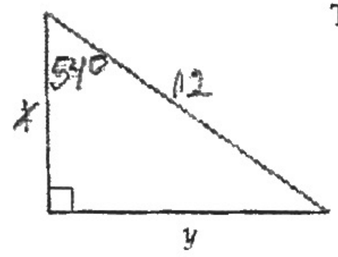
S = O/H sin A = ____ sin B = ____

C = A/H cos A = ____ cos B = ____

T = O/A tan A = ____ tan B = ____

Solve for the value of x and y.

SOH-CAH-TOA

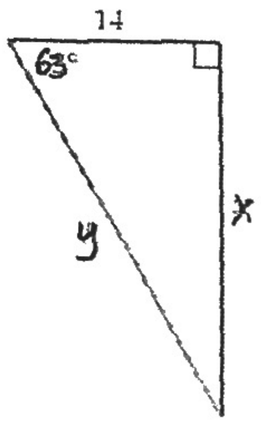


To solve for x

To solve for y

Solve for the value of x and y.

SOH-CAH-TOA

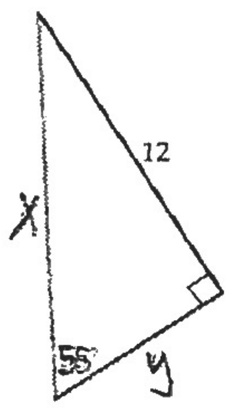


To solve for x

To solve for y

Solve for the value of x and y.

SOH-CAH-TOA



To solve for x

To solve for y

SOH CAH TOA

$$\sin \angle = \frac{\text{opposite}}{\text{hypotenuse}} \qquad \cos \angle = \frac{\text{adjacent}}{\text{hypotenuse}} \qquad \tan \angle = \frac{\text{opposite}}{\text{adjacent}}$$

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Geometry
Chapter 8
Lesson 12
" How to use SOH-CAH-TOA"

Name _____

Trigonometric Functions of Acute Angles

Remember

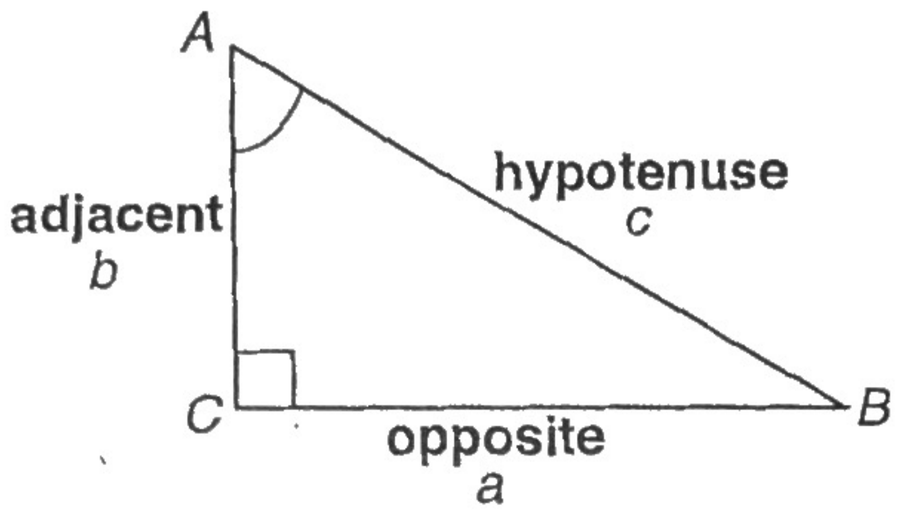
1. There are 6 **trigonometric functions**: **sine** (sin), **cosine** (cos), **tangent** (tan), **cosecant** (csc), **secant** (sec), and **cotangent** (cot)
2. **Cofunctions**: sine and cosine, tangent and cotangent, secant and cosecant
3. **Reciprocal Functions**: (sine, cosecant), (cosine, secant), (tangent, cotangent)
4. In a right triangle, the **hypotenuse** is always opposite the right angle.

   In right triangle *ABC*, legs *a* and *b* are named with respect to acute angle *A*.

$\sin A = \frac{a}{c}$, $\csc A = \frac{c}{a}$

$\cos A = \frac{b}{c}$, $\sec A = \frac{c}{b}$

$\tan A = \frac{a}{b}$, $\cot A = \frac{b}{a}$



Across

3. sin A = ___ B

5. relationship between the acute angles of a right triangle

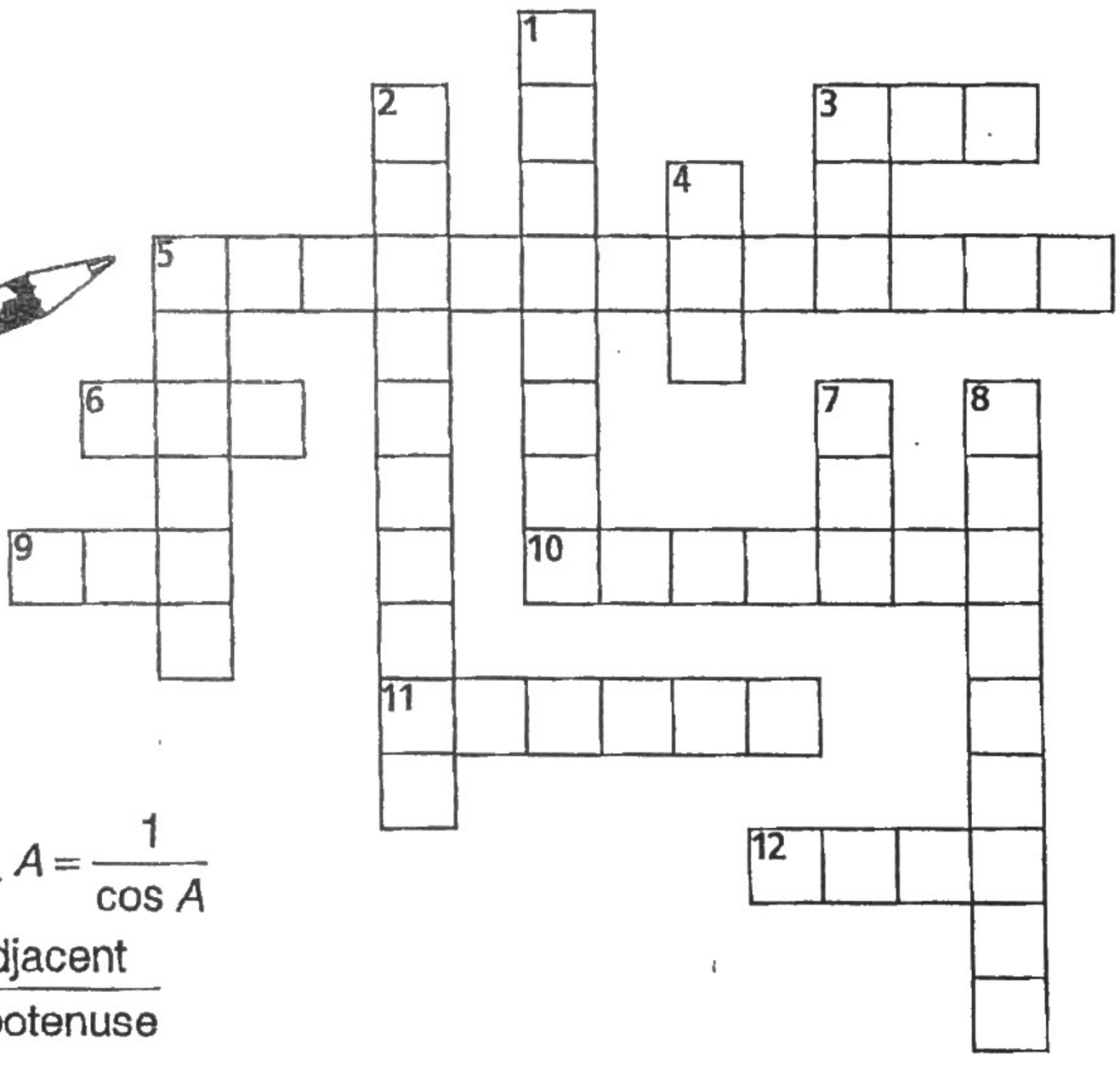
6. $\sin A = \frac{1}{\_\_\_}$ A

9. ___ A = cot B

10. $\frac{\text{opposite}}{\text{adjacent}}$

11. $\frac{\text{hypotenuse}}{\text{adjacent}}$

12. $\frac{\text{opposite}}{\text{hypotenuse}}$



Down

1. $\frac{\text{hypotenuse}}{\text{opposite}}$

2. side opposite right angle

3. ___ $A = \frac{1}{\tan A}$

4. ___ $A = \frac{1}{\cos A}$

5. $\frac{\text{adjacent}}{\text{hypotenuse}}$

7. product of two reciprocals

8. $\frac{\text{adjacent}}{\text{opposite}}$

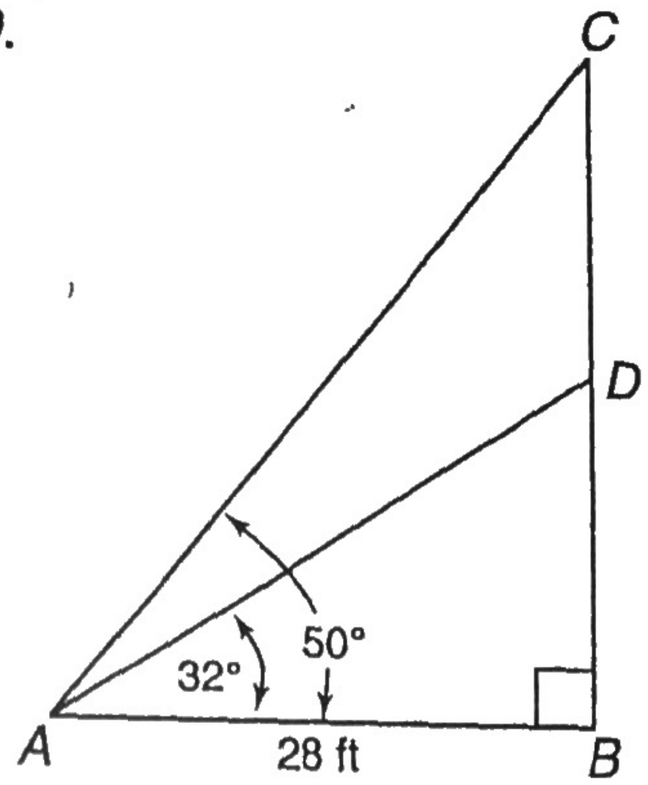
Name _____

#5

Applying Trigonometry in Right Triangles

Example

Use the information in the diagram to find *BC* and *CD*.



1. $\overline{BC}$ is a side of right $\triangle ABC$.

$$\tan \angle CAB = \frac{\text{opposite}}{\text{adjacent}} = \frac{BC}{AB}$$

$$\tan 50° = \frac{BC}{28}$$

$$BC = 28(\tan 50°)$$

$$BC \approx 28(1.1918)$$

$$BC \approx 33.4 \text{ ft}$$

2. Use right $\triangle ABD$ to find *BD*.

$$\tan 32° = \frac{BD}{28}$$

$$BD = 28(\tan 32°)$$

$$BD \approx 28(0.6249) \approx 17.5 \text{ ft}$$

3. Subtract to get *CD*.

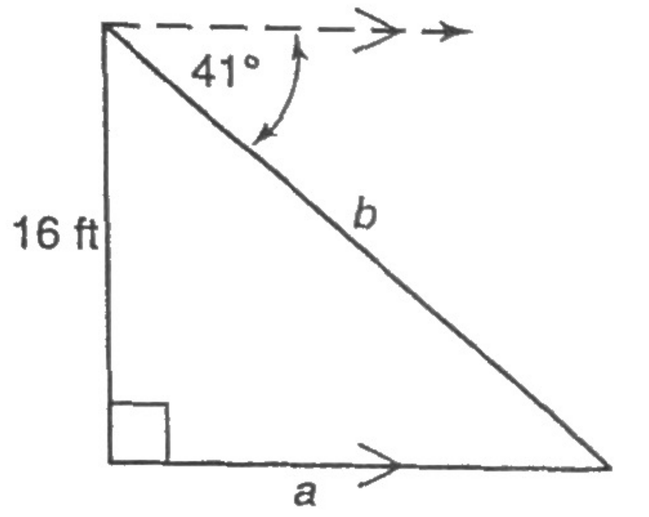
$$CD = BC - BD$$

$$CD \approx 33.4 - 17.5$$

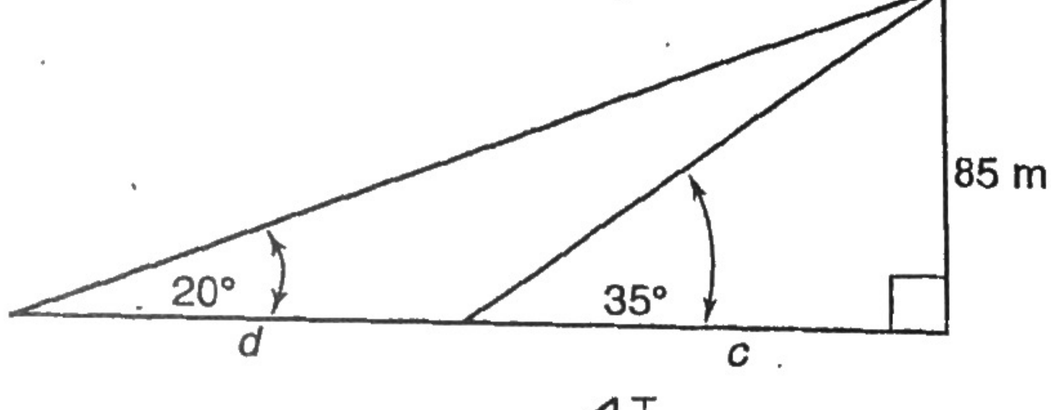
$$CD \approx 15.9 \text{ ft}$$

Find the measures of the lettered segments. Use the answer code to fill in the blanks that follow for *a*-*h*, and reveal the reason the Ancient Greeks developed trigonometry.

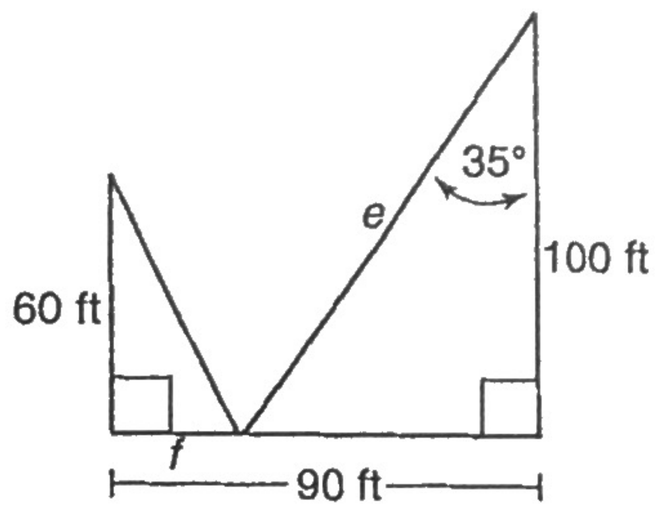
1.



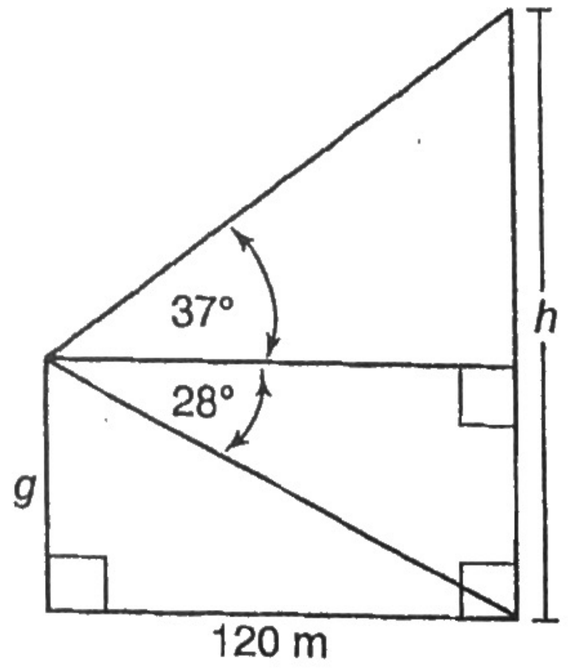
2.



3.



4.



121.4	18	122.1	20	24	112.9	112.1	154.2	22	63.8
T	A	O	N	S	D	R	Y	P	M

___ ___ ___ ___ ___ ___ ___ ___ ___

a b c d e f e g h