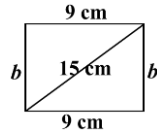


Semester 2 Final Review E
Trigonometric Ratios and Pythagorean Theorem

Example:

Shawn builds a rectangular picture frame. If the frame, shown below, has a diagonal measure of 15 cm and a width of 9 cm, what is the approximate height of the frame?



Use the Pythagorean Theorem to determine b .

$$a^2 + b^2 = c^2 \leftarrow \text{hypotenuse}$$

$$9^2 + b^2 = 15^2$$

$$81 + b^2 = 225$$

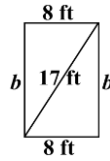
$$b^2 = 144$$

$$b = \sqrt{144}$$

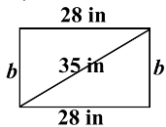
$$b = 12$$

$$\boxed{12 \text{ cm}}$$

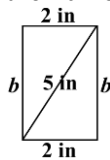
1. Kelly is constructing a rectangular loading door. If the door, shown below, has a width of 8 ft. and a diagonal support of 17 ft, what is the approximate height of the door?



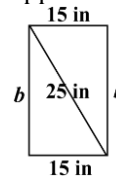
2. George bought a rectangular TV. If the TV, shown below, has a diagonal measure of 35 in. and a width of 28 in., what is the approximate height of the TV?



3. Joey is constructing a rectangular frame. If the frame, shown below, has a width of 2 in. and a diagonal distance of 5 in., what is the approximate height of the frame?

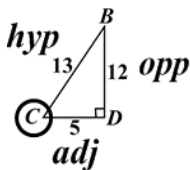
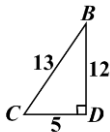


4. Letty bought a rectangular TV. If the TV has a diagonal distance of 25 in. and a width of 15 in., what is the approximate height of the TV?



Example:

Right triangle BCD is shown below. Determine the ratio equivalent to $\cos(C)$.



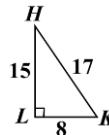
SOH(CA)HTOA

Cosine is ADJ over HYP - label the sides and then plug them in.

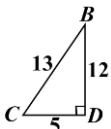
$$\cos(C) = \frac{\text{adj}}{\text{hyp}}$$

$$\boxed{\cos(C) = \frac{5}{13}}$$

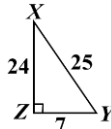
5. Right triangle HKL is shown below. Determine the ratio equivalent to $\cos(H)$.



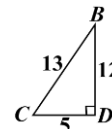
6. Right triangle BCD is shown below. Determine the ratio equivalent to $\sin(C)$.



7. Right triangle XYZ is shown below. Determine the ratio equivalent to $\cos(X)$.

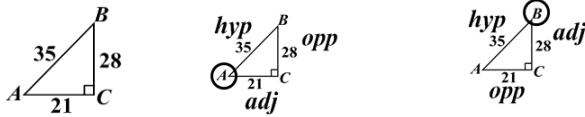


8. Right triangle BCD is shown below. Determine the ratio equivalent to $\tan(B)$.



Example:

Consider right triangle ABC shown below.



Which trigonometric ratios are equivalent to $\frac{3}{5}$?

SOH CAH TOA

$$\sin A = \frac{28 \div 7}{35 \div 7} = \frac{4}{5}$$

$$\sin B = \frac{21 \div 7}{35 \div 7} = \frac{3}{5}$$

$$\cos A = \frac{21 \div 7}{35 \div 7} = \frac{3}{5}$$

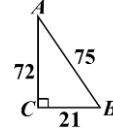
$$\cos B = \frac{28 \div 7}{35 \div 7} = \frac{4}{5}$$

$$\tan A = \frac{28 \div 7}{21 \div 7} = \frac{4}{3}$$

$$\tan B = \frac{21 \div 7}{28 \div 7} = \frac{3}{4}$$

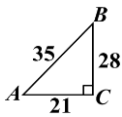
cos A & sin B

9. Consider right triangle ABC shown below.



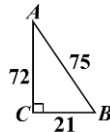
Which trigonometric ratios are equivalent to $\frac{7}{25}$?

10. Consider right triangle ABC shown below.



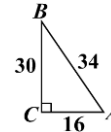
Which trigonometric ratios are equivalent to $\frac{4}{5}$?

11. Consider right triangle ABC shown below.



Which trigonometric ratios are equivalent to $\frac{24}{25}$?

12. Consider right triangle ABC shown below.

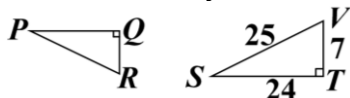


Which trigonometric ratios are equivalent to $\frac{15}{8}$?

Example:

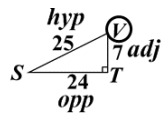
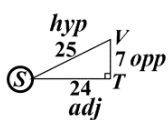
Triangle PQR is similar to triangle STV.

Note: Drawings are not necessarily to scale.



Select all angles whose cosine equals $\frac{7}{25}$.

Remember, if Triangle PQR is similar to triangle STV, then P & S go together, Q & T go together, and R & V go together.



SOH CAH TOA

$$\cos S = \frac{24}{25}$$

$$\cos V = \frac{7}{25}$$

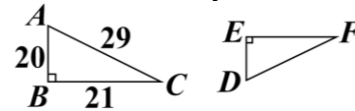
$$\cos P = \frac{24}{25}$$

$$\cos R = \frac{7}{25}$$

∠V & ∠R

13. Triangle ABC is similar to triangle DEF.

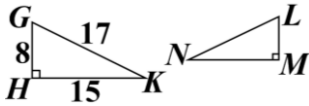
Note: Drawings are not necessarily to scale.



Identify all angles whose tangent equals $\frac{21}{20}$.

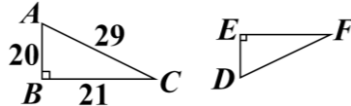
Name: _____

14. Triangle GHK is similar to triangle LMN. *Note: Drawings are not necessarily to scale.*



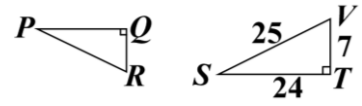
Identify all angles whose sine equals $\frac{8}{17}$.

15. Triangle ABC is similar to triangle DEF. *Note: Drawings are not necessarily to scale.*



Identify all angles whose cosine equals $\frac{20}{29}$.

16. Triangle PQR is similar to triangle STV. *Note: Drawings are not necessarily to scale.*



Identify all angles whose sine equals $\frac{7}{25}$.

Semester 2 Final Review E
Trigonometric Ratios and Pythagorean Theorem Answers:

1. 15 ft	2. 21 in	3. 4.6 in	4. 20 in
5. $\cos(H) = \frac{15}{17}$	6. $\sin(C) = \frac{12}{13}$	7. $\cos(X) = \frac{24}{25}$	8. $\tan(B) = \frac{5}{12}$
9. $\sin A$ & $\cos B$	10. $\sin A$ & $\cos B$	11. $\cos A$ & $\sin B$	12. $\tan A$
13. $\angle A$ & $\angle D$	14. $\angle K$ & $\angle N$	15. $\angle A$ & $\angle D$	16. $\angle P$ & $\angle S$