

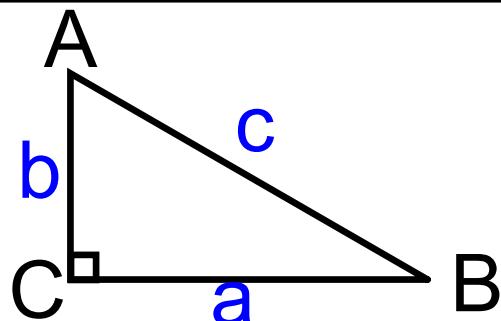
1.1 Right Triangle Trigonometry

EQ: How do I calculate the six trig ratios of a given right triangle?

Warm-Up

Happy belated bday, Bryce!!!

Write your name on your weekly sheet. You will have a warm-up question at the beginning of class (with an about me) and a closing question for each class. The sheet will be due at the end of the week! **Have out your notebook** - we start PreCal today!



Tell me what you know about triangle ABC.

- right Δ $a^2 + b^2 = c^2$
- \angle 's add to 180
- 3 vertices

About Me

1. Are you a dog person or a cat person?
2. What are you most looking forward to this year?

MISSING STUFF!!!

Quiz

3rd period avg: 89.7
6th period avg: 87

HW (fractions)

Christian
Nicole
Bryce

Parent Form

| | |
|-----------|--------|
| Stephanie | Caden |
| Winta | George |
| Anthony | |
| Natasha | Leslie |
| Meech | |
| Michael | Bryce |
| Jermaine | |
| Monica | |
| Jacob | |
| Victoria | |

check focus!!!

MISSING STUFF!!!

Quiz

Madie (congrats on y'all's tournament!!)
Natalie

3rd period avg: 89.7

6th period avg: 87

HW (fractions)

Mollie
Zarah
Hannah
Madie
Jo
Natalie

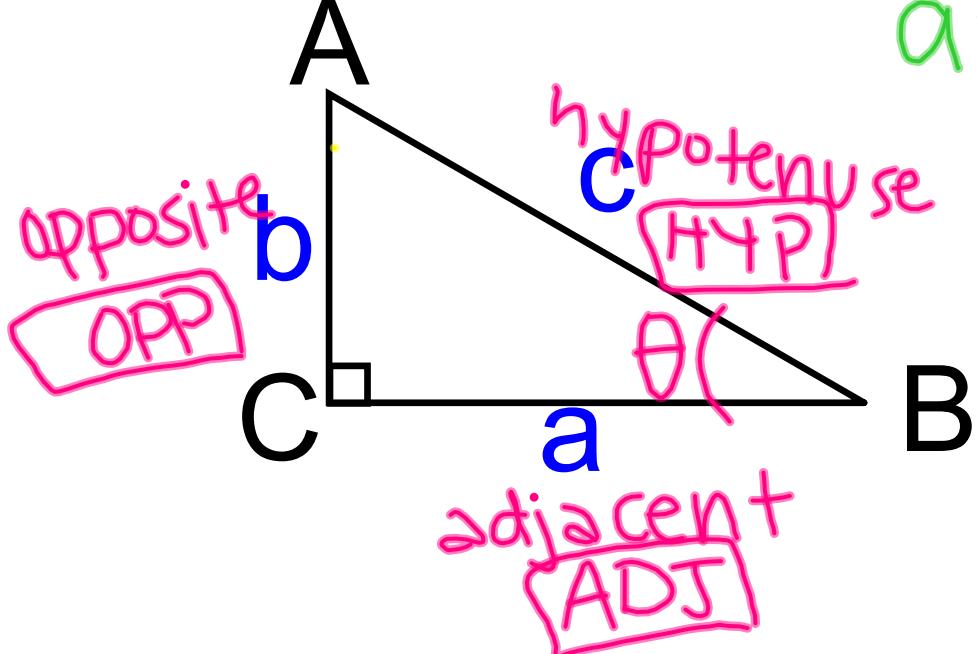
Parent Form

| | |
|----------|--------|
| Kayla | Julie |
| Victoria | Mary |
| Addie | |
| Madeline | Kyle |
| Zarah | Grant |
| Madie | |
| Julian | Jordan |
| Jo | |
| Eduardo | |

check focus!!!

1.1 Right Triangle Trigonometry

EQ: How do I calculate the six trig ratios of a given right triangle?



$$a^2 + b^2 = c^2$$

capitals \Rightarrow angles
lowercase \Rightarrow sides

θ "theta"
c starting place

1.1 Right Triangle Trigonometry

EQ: How do I calculate the six trig ratios of a given right triangle?

Six Trig Functions

SOH CAH TOA

S O H C A H T O A

"sine" $\sin \theta = \frac{\text{OPP}}{\text{HYP}}$

"cosine" $\cos \theta = \frac{\text{ADJ}}{\text{HYP}}$

"tangent" $\tan \theta = \frac{\text{OPP}}{\text{ADJ}}$

(Ratio)
fraction answers

Reciprocal (Flip)

C H S H C A
C O S A C O

$\csc \theta = \frac{\text{HYP}}{\text{OPP}}$

$\sec \theta = \frac{\text{HYP}}{\text{ADJ}}$

$\cot \theta = \frac{\text{ADJ}}{\text{OPP}}$

1.1 Right Triangle Trigonometry

EQ: How do I calculate the six trig ratios of a given right triangle?

$$\mathbf{S}^{\text{O}}_{\text{H}}$$

$$\mathbf{C}^{\text{A}}_{\text{H}}$$

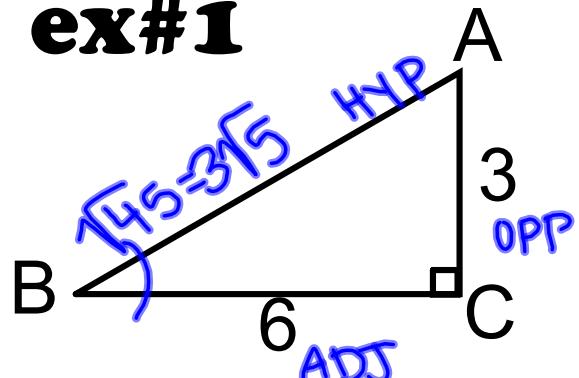
$$\mathbf{T}^{\text{O}}_{\text{A}}$$

$$\mathbf{C}^{\text{H}}_{\text{O}}$$

$$\mathbf{S}^{\text{H}}_{\text{A}}$$

$$\mathbf{C}^{\text{A}}_{\text{O}}$$

ex#1



Find all six trig functions for $\angle B$.

$$\begin{aligned} 6^2 + 3^2 &= c^2 \\ 36 + 9 &= c^2 \\ \sqrt{45} &= \sqrt{c^2} \end{aligned}$$

$$\begin{aligned} \sin B &= \frac{O}{H} = \frac{3}{\sqrt{45}} = \frac{3}{3\sqrt{5}} = \frac{1}{\sqrt{5}} \\ \cos B &= \frac{A}{H} = \frac{6}{\sqrt{45}} = \frac{6}{3\sqrt{5}} = \frac{2}{\sqrt{5}} \\ \tan B &= \frac{O}{A} = \frac{3}{6} = \frac{1}{2} \end{aligned}$$

$$\csc B = \sqrt{5}$$

$$\sec B = \frac{\sqrt{5}}{2}$$

$$\cot B = 2$$

1.1 Right Triangle Trigonometry

EQ: How do I calculate the six trig ratios of a given right triangle?

$$\begin{matrix} S & O \\ H & \end{matrix}$$

$$\begin{matrix} C & A \\ H & \end{matrix}$$

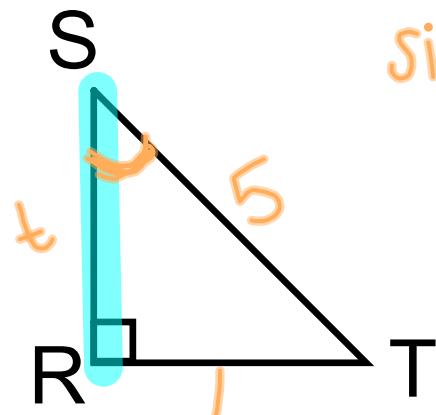
$$\begin{matrix} T & O \\ A & \end{matrix}$$

$$\begin{matrix} C & H \\ O & \end{matrix}$$

$$\begin{matrix} S & H \\ A & \end{matrix}$$

$$\begin{matrix} C & A \\ O & \end{matrix}$$

ex#2 If $\sin S = 1/5$, find SR.



$$\sin S = \frac{\text{OPP}}{\text{HYP}} = \frac{1}{5}$$

$$t^2 + 1^2 = 5^2$$

$$t^2 + 1 = 25$$

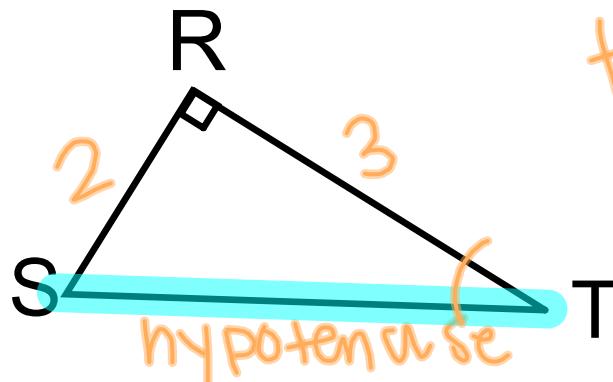
$$\begin{aligned} t^2 &= 24 \\ \sqrt{t^2} &= \sqrt{24} \\ t &= 2\sqrt{6} \end{aligned}$$

1.1 Right Triangle Trigonometry

EQ: How do I calculate the six trig ratios of a given right triangle?

 S^O_H
 C^A_H
 T^O_A
 C^H_O
 S^H_A
 C^A_O

ex#3 If $\tan T = 2/3$, find ST.



$$\tan T = \frac{\text{OPP}}{\text{ADJ}} = \frac{2}{3}$$

$$\begin{aligned} 2^2 + 3^2 &= c^2 \\ \sqrt{13} &= c \end{aligned}$$

$\sqrt{13}$

1.1 Right Triangle Trigonometry

EQ: How do I calculate the six trig ratios of a given right triangle?

$$\begin{matrix} \mathbf{S} \\ \mathbf{H} \end{matrix}^{\text{O}}$$

$$\begin{matrix} \mathbf{C} \\ \mathbf{H} \end{matrix}^{\text{A}}$$

$$\begin{matrix} \mathbf{T} \\ \mathbf{A} \end{matrix}^{\text{O}}$$

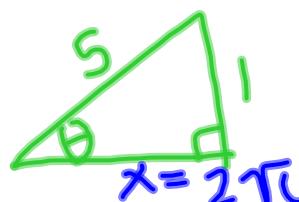
$$\begin{matrix} \mathbf{C} \\ \mathbf{O} \end{matrix}^{\text{H}}$$

$$\begin{matrix} \mathbf{S} \\ \mathbf{A} \end{matrix}^{\text{H}}$$

$$\begin{matrix} \mathbf{C} \\ \mathbf{O} \end{matrix}^{\text{A}}$$

ex#4 If $\csc\theta=5$, find $\tan\theta$.

DRAW A PICTURE



$$\csc\theta = \frac{\text{HYP}}{\text{OPP}} = \frac{5}{1}$$

$$\tan\theta = \frac{\text{OPP}}{\text{ADJ}}$$

$$= \frac{1}{2\sqrt{6}}$$



$$x^2 + 1^2 = 5^2$$

see ex#2

1.1 Right Triangle Trigonometry

EQ: How do I calculate the six trig ratios of a given right triangle?

$$\begin{matrix} S & O \\ H & \end{matrix}$$

$$\begin{matrix} C & A \\ H & \end{matrix}$$

$$\begin{matrix} T & O \\ A & \end{matrix}$$

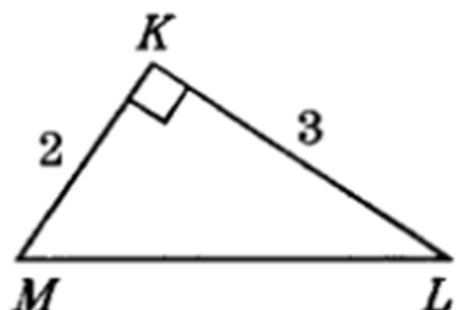
$$\begin{matrix} C & H \\ O & \end{matrix}$$

$$\begin{matrix} S & H \\ A & \end{matrix}$$

$$\begin{matrix} C & A \\ O & \end{matrix}$$

CLOSING

Use the diagram and find:



1. $\tan \angle L$
2. $\sin \angle M$
3. $\csc \angle L$

ODDS

1.1 Right Triangle Trig

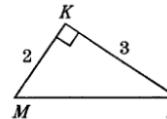
For problems 1-8, use the diagram of $\triangle KLM$ and find:

1. $\cos \angle L$

2. $\tan \angle L$

3. $\csc \angle M$

4. $\sin \angle M$



5. $\cot \angle M$

6. $\csc \angle L$

7. $\sec \angle L$

8. $\cos \angle M$

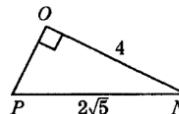
For problems 9-16, use the diagram of $\triangle NOP$ and find:

9. $\sin \angle N$

10. $\cot \angle P$

11. $\sec \angle N$

12. $\csc \angle N$



13. $\tan \angle P$

14. $\cos \angle P$

15. $\cos \angle N$

16. $\csc \angle P$

For problems 17-23, use the diagram of $\triangle ABC$ to fill in the missing angle letter:

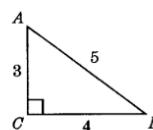
17. $\sin \angle \underline{B} = \frac{3}{5}$

H

18. $\csc \angle \underline{\quad} = \frac{5}{4}$

19. $\cot \angle \underline{\quad} = \frac{3}{4}$

20. $\sec \angle \underline{\quad} = \frac{5}{4}$



21. $\tan \angle \underline{\quad} = \frac{3}{4}$

22. $\cos \angle \underline{\quad} = \frac{3}{5}$

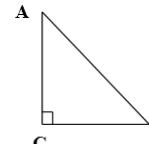
23. $\csc \angle \underline{\quad} = \frac{5}{3}$

DRAW A PICTURE

For problems 24-31, use the diagram of $\triangle ABC$ to find each side length:

24. If $\sin \angle B = \frac{2}{5}$, find AB

25. If $\sin \angle B = \frac{3}{4}$, find BC



26. If $\csc \angle B = \frac{7}{3}$, find BC

27. If $\cos \angle A = \frac{3}{5}$, find BC

28. If $\sec \angle A = \frac{6}{5}$, find BC

29. If $\tan \angle B = \frac{7}{5}$, find AB

30. If $\cot \angle B = \frac{5}{3}$, find AB

31. If $\sec \angle A = \frac{7}{3}$, find AB

32. If $\cos \theta = \frac{4}{5}$, what is $\tan \theta$?

33. If $\tan \theta = 3$, what is $\sec \theta$?

34. If $\csc \theta = \frac{7}{3}$, what is $\cot \theta$?

35. If $\cot \theta = \frac{1}{2}$, what is $\sin \theta$?