

Use a special right triangle to write each trigonometric ratio as a fraction.
4. $\cos 60^{\circ}$
5. $\sin 45^{\circ}$
6. $\tan 60^{\circ}$

Jun 26th 1:55:29 pm


Jun 26th 1:56:16 pm
Hi! My name is Ms. Herring and I will be your tutor for this session. How are you? $\checkmark$ Introduction: Builds rapport with warm greeting Jun 26th 1:56:40 pm

Hi! I'm good how are you?
Jun 26th 1:56:56 pm
I'm quite well, thank you for asking! I'm checking your work now, but it looks like the problem may be asking for something a little different! Do you know what it means by expressing
trigonometric ratios as fractions?
$\checkmark$ A1: Determine student's level of understanding Jun 26th 1:57:49 pm

## No:/ sorry

Jun 26th 1:58:22 pm
That's totally fine - we'll figure this out together! And just so you know, your answers are equivalent to the right answers, just not quite what the problem is looking for!
$\checkmark$ A1: Clarifies the issue with the student's progress Jun 26th 1:58:51 pm

Okay! Thy
Jun 26th 1:59:10 pm
The trigonometric ratios this is asking about are sine, cosine and tangent. Does the phrase "son rah to" sound familiar at all?
$\checkmark$ A1: Gauge student's existing knowledge
Jun 26th 1:59:22 pm
Yeah I've heard it but I don't know what it stands for
Jun 26th 1:59:56 pm
It's a mnemonic that helps us find the trig functions from triangles, instead of with a calculator!
$\checkmark$ C1: Adapt instruction to student gap Jun 26th 2:01:05 pm

For example, it tells us that the cosine of an angle is equal to the side opposite the angle over the hypotenuse!
we apply that, do you know what the problem means by special right triangles?
C2: Reassuring language Jun 26th 2:01:39 pm


Jun 26th 2:01:46 pm
Oh ya! This
Jun 26th 2:01:47 pm
Super, that's exactly it!
$\checkmark$ C2: Positive language Jun 26th 2:02:00 pm

Right triangles are angled where one of the angles is $90^{\circ}$ right?
Jun 26th 2:02:27 pm
You're doing great! Do you know what the problem means by special right triangles?
, C3: Encourages student to share existing knowledge Jun 26th 2:02:47 pm

## No

Jun 26th 2:02:58 pm
Then I'll explain! There are two types: 30-60-90 and 45-45-90! The first one, 30-60-90, has a 30 degree angle, a 60 degree angle and a 90 degree angle. Does that make sense? $\checkmark$ C1: Adapt instruction to student gap

Jun 26th 2:03:33 pm

## Yes:)

Jun 26th 2:03:59 pm
They're special because their sides always follow the same ratio of lengths - just a sec and I'll draw out the 30-60-90!

Jun 26th 2:04:08 pm
Thanks!!!
Jun 26th 2:04:26 pm


[^0]Jun 26th 2:04:50 pm

## Yes

Jun 26th 2:05:22 pm
Great! For this problem, we want to find the cosine of the 60 degree angle. What sides do we need for that, with the ratios you sent me?

C3: Guiding question Jun 26th 2:05:50 pm

Adjacent and hypotenuse
Jun 26th 2:06:48 pm
Super! In the picture I sent, what is the length of the side adjacent to the 60 -degree angle?
$\checkmark$ C3: Invite student input Jun 26th 2:07:03 pm

X?
Jun 26th 2:07:33 pm
Or $2 x$ ?
Jun 26th 2:07:39 pm
X is correct! The side with 2 x is also next to the 60-degree angle, true, but it's not the adjacent because it's the hypotenuse! Does that make sense?

C1: Tutor redirects student's mistake without causing stress Jun 26th 2:08:20 pm

Yes!
Jun 26th 2:08:41 pm
Terrific! Can you plug in our adjacent side and our hypotenuse into the cosine fraction?
C3: Encourage student to take the next step
Jun 26th 2:09:01 pm
Yes one sec
Jun 26th 2:09:35 pm
I'll be patient :)
C2: Reassure the student
Jun 26th 2:09:41 pm
$\operatorname{Cos} 60^{\circ}=x / 2 x$
Jun 26th 2:10:30 pm
Is that right?
Jun 26th 2:10:38 pm
Awesome job! Can we simplify that all, or cancel anything?
C3: Guiding question
Jun 26th 2:10:41 pm
Cancel out the Xs?
Jun 26th 2:11:09 pm

Can you do $\operatorname{Cos} 60^{\circ} / 2$ ?

## Jun 26th 2:11:46 pm

It might help to look at the answer you got before, actually - it's equal to what we should get here! Does that help?
$\checkmark$ B2: Tutor ties step back to student's existing knowledge Jun 26th 2:12:19 pm

Sorry I'm confused:/
Jun 26th 2:13:16 pm
I'll try to explain differently, then :) We had $\cos (60)=x / 2 x$, correct?
$\checkmark$ C1: Adapts explanation to student's confusion
Jun 26th 2:13:48 pm

## Yes

Jun 26th 2:13:56 pm
Were you asking about $\cos (60) / 2$ as a way of simplifying that, or just curious? I may have misunderstood!
$\checkmark$ C1: Checks in with student to make sure they're on the same page Jun 26th 2:14:11 pm

Yes that as a way of simplifying
Jun 26th 2:14:32 pm
I see! That won't quite work, because $\cos (60)$ is on the other side of the equal sign! Does it help if I write it as $\cos (60)=1 \mathrm{x} / 2 \mathrm{x}$ ?

Jun 26th 2:15:09 pm
Okay and then where do you go from there to solve the problem?
Jun 26th 2:15:46 pm
What we get on the right side once we simplify is the answer! What do we get on the right side?
$\checkmark$ C3: Guiding question Jun 26th 2:16:09 pm

Oh! 0.5
Jun 26th 2:16:33 pm
Right! What is that as a fraction?
$\checkmark \quad$ C3: Guiding question Jun 26th 2:16:39 pm

1/2 half!

Jun 26th 2:16:49 pm
That's correct! Nice work :) Do you have any questions about what we did for this one?
C1: Check with the student to ensure understanding Jun 26th 2:17:02 pm

## No:)

Jun 26th 2:17:10 pm
Super! For the next one, how about I draw out a 45-45-90 special right triangle first? Then we can use that to figure it out!

B2: Explain approach upfront Jun 26th 2:17:39 pm

While I'm doing that, which trig function do we need? What is the ratio for it?
$\checkmark$ C3: Guiding question Jun 26th 2:17:51 pm

Okay! Sine= opposite over hypotenuse
Jun 26th 2:18:31 pm


Awesome job! And here's the special right triangle! How do you think we can use that to find the sine of a 45-degree angle?

C3: Invite student input Jun 26th 2:19:04 pm

Sine $45^{\circ}=x / x$ square root of 2
Jun 26th 2:20:26 pm
Woohoo! You are right :) Can we simplify that one at all?
C3: Guiding questions Jun 26th 2:20:51 pm

Can the Xs cancel out again?
Jun 26th 2:20:57 pm
Indeed they can! What do we get when we do that?
Jun 26th 2:21:05 pm
Sine $45^{\circ}=$ square root of 2
Jun 26th 2:21:33 pm
Was the square root of 2 on the bottom or the top of the fraction?
C3: Guides student towards understanding their mistake Jun 26th 2:21:49 pm

Bottom
Jun 26th 2:22:07 pm
Great! Let's keep it on the bottom when we cancel, then!
B2: Clarifies step further Jun 26th 2:22:26 pm

What does the fraction look like if we have sqrt(2) on the bottom and 1 on the top?
C3: Guiding question Jun 26th 2:22:39 pm

## 0.7 approx

Jun 26th 2:23:18 pm
How do I turn that into a fraction:/
Jun 26th 2:23:32 pm
That's the right value, yes! Terrific!
C2: Motivates student with encouraging language
Jun 26th 2:23:38 pm
We had $1 \mathrm{x} / \mathrm{x}^{*}$ sqrt(2), right? What's left over if we remove the x from the bottom and the x from the top?
$\checkmark$ C1: Adapts explanation to student's confusion
Jun 26th 2:24:01 pm
1/2?
Jun 26th 2:24:32 pm
Or 1/ square root of 2
Jun 26th 2:24:48 pm
The second one - fantastic! If we plug that into a calculator, do we get 0.7 ?
B2: Tutor ties information back to student's work
Jun 26th 2:25:03 pm
Yes!
Jun 26th 2:25:13 pm
You're doing great! Would you like help with the third one, too?
C2: Positive language
Jun 26th 2:25:28 pm
Yes please. Just to make sure I'm doing it right:)
Jun 26th 2:25:49 pm

Okey-dokey! Before I suggest or explain anything, how do you think we can get started?
C3: Invite student input Jun 26th 2:26:09 pm

Tan60 $=x$ square root of $3 / x$

Jun 26th 2:27:23 pm
That's correct! Nice work :) What do we get when we simplify that one?
C3: Guiding question Jun 26th 2:27:56 pm

## We get $\tan 60^{\circ}=$ square root of 3 over 1

Jun 26th 2:28:44 pm
Woohoo! You are right :) Do you have any questions about what we did for that one?
C1: Check with the student to ensure understanding Jun 26th 2:28:56 pm

And you get approx 1.7
Jun 26th 2:29:05 pm
No
Jun 26th 2:29:10 pm
Indeed we do :)
C2: Encouraging words / punctuation Jun 26th 2:29:12 pm

Is there anything else you'd like help with? If not, I hope you have a wonderful day!
$\checkmark \quad$ Tutor checks to make sure student doesn't need further help + warm send-off Jun 26th 2:29:25 pm

No thank you so much! You have a wonderful day too:)
Jun 26th 2:30:14 pm
Thanks! Bye :)
Jun 26th 2:30:21 pm
Bye!
Jun 26th 2:30:27 pm


[^0]:    $\checkmark$ B2: Uploads helpful information to supplement explanation

