4.4 sine and cosine transformations worksheet

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Some worksheets for this concept are Sine transformations and cosine functions KS4, Honor algebra 2 name, Trigonometry graphs i transformation sin i cos, amplitude i period for sinus i cosine function work, Grafi trig function, Work 15 key, 13 trigonometry graph work, Math 7a trig graphing work use transformations it. Have you found the worksheet you're looking for? To download/print, click the print icon or print icon on the worksheet to print or download. The worksheet opens in a new window. You can & download or print with browser document reader options. Level 6-7 Looking at the lower triangle, is a sine rule: \dfrac{\textcolor{limegreen}{a}}{\son \textcolor{limegreen}{A}}=\dfrac{\textcolor{blue}}}{\sin \textcolor{blue}{B}}=\dfrac{\textcolor{red}}}\sin \textcolor{red}}} We've investigated examples of how to use your sino rule to light up the missing pages. Use the sino rule to find the side length marked x to 3 s.f. [2 tags] First, we need to match the letters in the formula with the pages we want, here: a=x, A=21\degree, b =23 and B =35\degree Next we are ready to replace the values in the formula. This gives us: \dfrac{x}{\sin(21°)}=\dfrac{23}{\sin(35°)} Multiply both pages by \sin(21°): x=\\dfrac{23}{\sin(35°)}\times\sin(21°) 21°) 21°) 21°) 24.37029543. x=14.4 (3 sf) As in previous topics, you do not need to evaluate the sine of functions until the final step. To find a sub-ore labeled x to 2 s.f, apply the sine rule. [2 codes] How is it that we are not sure that we are missing out on the missing version of the sinus rule: \dfrac{\sin A}{a}=\dfrac{\son B}{b}=\dfrac{\sin C}{c} A=x, a=43, B=33\degree, b=25. To replace these values in the formula, we get: \dfrac{\sin x}{43}=\dfrac{\sin(33°)}{25} To rep both pages by 43 to get: \sin x=\dfrac{43\sin(33°)}{25} Then, \sin^{-1} both pages, we got: x= \sin^{-1}\bigg(\dfrac{43\sin(33°)}{25}\bigg) x=69.5175049...° Did, the question be asked for obtuse ugao, did we get an acute answer – why? This is because we can draw two different (but both triangle using the information we received at the beginning. This is an uneasy example of the sinus rule and it occurs when you have 2 pages and a corner that does not lie between them. To find the angle of obtuse, simply subtract the acute angle from 180: 180-69.5175049=110.4824951 x=110\degree (2 sf) First we must find the angle opposite the missing page, as it is not given in question. Using all angles in the triangle to add to 180 degrees we get that: A=180\degree-40\degree-94\degree=46\degree Now we have enough information, to correctly highlight the triangle and replace the values in the sine rule: \dfrac{x}{\sin(46 \degree)}=\dfrac{10.5}{\sin(94\degree)} Solving x we get: x=\dfrac{10.5}{\sin(94\degree)}\times\sin(46\degree)=7.571511726... x=7.57 (3 sf). Here we can immediately apply the sinus rule: \dfrac{x}{\sin(30\degree)}=\dfrac{5}{\sin(80\degree)} Multiply both sides of equation by \sin(30\type)} Multiply both sides of equation by \sin(30\\degree)} Multiply both sides of equation by \sin(30\type)} Multiply both sides of equation by \sin(30\son) degree): x=\dfrac{5}{\sin(80\degree)}\times\sin(30\degree)=2.538566... x=2.54 cm (3 sf). Here we can immediately apply the sinus rule: \dfrac{\sin(x\degree)}{12}=\dfrac{\sin(15\degree)}}{7} Multiply both sides of the equation by 12 found: \sin(x)=\dfrac{12\times\sin(() 15\degree)}{7}=0.4436897916 Taking the inverse sine of both sides: x=\sin^{-1}(0.4436897916)=26.33954244\degree But considering the diagram, Ugao is clearly obtuse (greater than 90°). This is an uneasy example of the sinus rule and occurs when you have 2 pages and a angle that does not lie between them. To find the subparagraph, simply subtract the acute angle from 180: 180\degree-26.33954244\degree =153.6604576 =154\degree (3 sf). Instead of typing a full number into the calculator for each step of the calculation, you can use the ANS button to save time. The sinus rule can be applied immediately: \dfrac{\sin(x\degree)} {6.5}=\dfrac{\sin(52\degree)}{12} Multiply both sides of the equation by 6.5 yes: \sin(x)=6.5 \times \dfrac{\sin(52\degree)}}{12} =0.4268391582 Taking the inverse sine of both sides and keeping the answer from the step on our calculator, We got: x=\sin^{-1}(ANS)=25.26713177 x=25.3 \degree (3 sf). Using the sinus rule: \dfrac{x} {\sin(35\degree)}=\dfrac{6}{\sin(68\degree)} Multiply both sides of the equation by \. (35\degree), we found: x=\dfrac{6}{\sin(68\degree)}\times\sin(35\degree)=3.711732685... x=3.71 cm (3 sf). Page 2 Level 6-7 For 3D Pitagoras, there is a new equation that can be used that only uses Pythagoras isorem twice. Find the length of \textcolor{red}{d} [3 tags] We already know this, Equation 1: \textcolor{limegreen}{a}^2 + \textcolor{orange}{b}^2 = \textcolor{black}{e}^2 i Edc edc can form i pravougaoni triugao, so that we can see well, Equation 2: \textcolor{black}{e}^2 + \textcolor{blue}{c}^e 2 =\textcolor{red}{d}^2 So that we can combine 1 and 2 to give our 3D Pythagorean equation. \textcolor{limegreen}{a}^2 + \textcolor{orange}{b}^2 +\textcolor{blue}{c}^2 =\textcolor{red}{d}^2 With 3D trigonometry is no problem, you need to resolve each section in steps, making it a more difficult topic. Example: The form of ABCDEFG is a cuboid. [3 codes] Find the length of the side FC marked in red at 3 sf. First, the shape is cuboid, which means that each is like a right corner. First we have to find FH, this will give us the basis of the rectangular triangle FHC, which will let us find FC. To find the lateral length of FH, We need to benefit from the adjacent FE=9\text{ cm} Hypotenuse =x That means we will benefit from 'CAH' \cos(26) = \dfrac{\text{}Adjacent}{\\\text {Hypotenuse}} = \dfrac{9}{FH} FH \times \cos(26) = 9 FH = 9 \div \cos(26) = 10,013... cm Now we know FH, our first triangle, FCH, looks like this: Now, we know two side lengths of this triangle , we can use Pythagorasov izorem to find the third, FC, which is the answer to the whole question. (FC)^2 = 5^2 + (10.013...) ^2 FC = \sqrt{5^{2} + (10.013...) ^{2}} = 11.2 cm (3 sf). If we draw a line from apex to E down to the center of the base, then this line represents a rectangular height, because we know that the apex is directly above the center. Observe the triangle formed by this line, the line going from centre to C, and the EC line. We know about hypotenuse, but we need more information. Here we observe that the distance from the centre to C is half from A to C. To search for AC, consider the ABC triangle. Therefore, the distance from the center of the base to C is 5\sqrt{2}. Finally, we take back the first triangle, which we now know has a base of 5\sqrt{2} cm, and calculate the rectangular height. 12^2 = (\text{HEIGHT})^2 + (5\sqrt{2})^2 (\text{HEIGHT})^2 = 12^2 - (5\sqrt{2})^2 = 144 - 50 = 94 \text{HEIGHT } = \sqrt{94} cm. Here we use 3D Pitagoras to find out that AY AY^2 =9^2 + 6^2+6^2 AY =\sqrt{81+36+36}=\sqrt{153}=3\sqrt{17} cm. Here we use 3D Pitagoras to find out that CE^2 =9^2 + 6^2+12^2 CE =\sqrt{81+36+144}=\sqrt{261}=3\sqrt{29} cm. First, we can clear the length of DB with Pythagora, or by recognising that the diagonal of the square \sqrt{2} \times \text{side length}, Thus: DB=14\sqrt{2} From here is the length from D to the center of the market, O, the amount of less than this value DO=7\sqrt{2} We now have sufficient information to find the necessary ugao , \tan(EDB) = \dfrac{O}{A} = \dfrac{11}{7\sqrt{2}}= \text{Angle} \ \ , EDB = tan^{-1} \bigg(\dfrac{11}{7\sqrt{2}} \bigg)=48.0\degree In order to be located in our site, we urge you to confirm your identity of the people. Thank you very much for your cooperation. top 8 worksheets in the category - Sine Transformations.Some of the worksheets shown are Trigonometric graphs and transformations of sin and cos, Transformations sine i cosine work 2, Amplitude i period for sine i cosine function work, Sine i cosine functions ks4, Graphs trig function, Math 7a trig graphing work use transformations to, Honors algebra 2 name. 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