 NESA exemplar question solutions

M6 non-right-angled trigonometry

Solutions for questions from the NESA topic guidance related to non-right-angled trigonometry.

1. The angle of depression from $J$ to $M$ is $75°$. The length of $JK$ is $20$ m and the length of $MK$ is $18$ m.



Calculate the angle of elevation from $M$ to $K$. Give your answer to the nearest degree.

Solution:

$$∠KJM=90°-75°=15°$$

In triangle $KJM$

$$\frac{\sin(\left(∠JMK\right))}{20}=\frac{\sin(15°)}{18}$$

$$\sin(\left(∠JMK\right))= \frac{20×sin15°}{18}$$

$$∠JMK=sin^{-1}\left(\frac{20×sin15°}{18}\right)$$

$$∠JMK=16°42^{'}46.56"$$

Elevation from $M$ to $K=75°-16°42^{'}46.56”$ (Alternate angles within parallel lines are equal)

Elevation from $M$ to $K=58°17^{'}13.44"$

$∴$The angle of elevation from $M$ to $K$ is $58°$ (correct to the nearest degree)

1. The area of the triangle shown is $250$ cm2.



What is the value of $x$, correct to the nearest whole number?

* 1. 11
	2. 18
	3. 22
	4. 24

Solution:

$$Area=\frac{1}{2}ab\sin(C)$$

$$250=\frac{1}{2}×30×x×\sin(44)°$$

$$250=15×x×\sin(44)°$$

$$x=\frac{250}{15×\sin(44°)}$$

$$x=23.99260899$$

$x=24$ cm (correct to the nearest cm)

$∴$ Correct answer is d