Applying Trigonometric Concepts to Problems

Learning Goal:

By the of today, I will take Word problems on like a mama bear defends her cubs; no prisoners, no holding, it's all business, I am going to get the answer or go down swinging.

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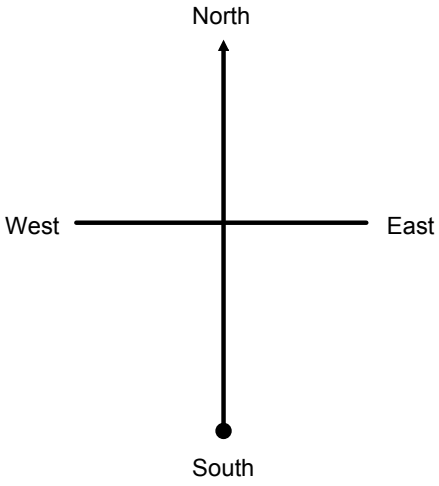
Compass Directions



Bearings are always measured from North, in a clockwise direction.

80 degrees

240 degrees

Azimuth are measured from the first direction given, towards the second given direction.

N70^{o}E

W25^{o}S

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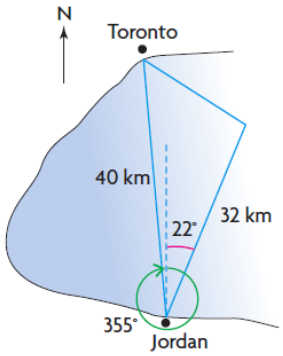
Steve leaves the marina at Jordan on a 40 km sailboat race across Lake Ontario intending to travel on a bearing of 355°, but an early morning fog settles. By the time it clears, Steve has travelled 32 km on a bearing of 22°.

? In which direction must Steve head to reach the finish line?



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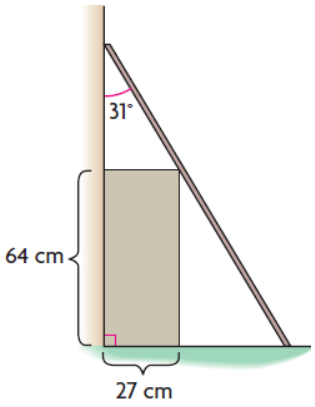
A ladder leaning against a wall makes an angle of 31° with the wall. The ladder just touches a box that is flush against the wall and the ground. The box has a height of 64 cm and a width of 27 cm. How long, to the nearest centimetre, is the ladder?



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Jim has a triangular backyard with side lengths of 27 m, 21 m, and 18 m. His bag of fertilizer covers 400 m^2. Does he have enough fertilizer?

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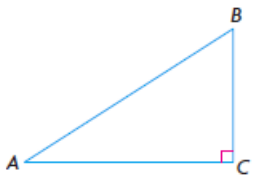
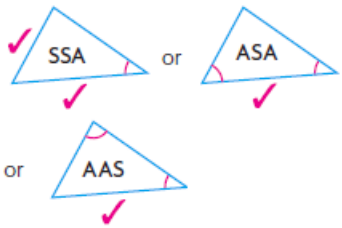
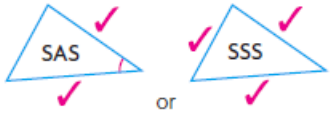
Given	Use
A right triangle with any two pieces of information 	Primary trigonometric ratios: $\sin A = \frac{\text{opposite}}{\text{hypotenuse}}$ $\cos A = \frac{\text{adjacent}}{\text{hypotenuse}}$ $\tan A = \frac{\text{opposite}}{\text{adjacent}}$
A triangle with information about sides and opposite angles 	The sine law: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$ or $\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$
A triangle with no information that allows you to use the sine law 	The cosine law: $a^2 = b^2 + c^2 - 2bc\cos A$ $b^2 = a^2 + c^2 - 2ac\cos B$ $c^2 = a^2 + b^2 - 2ab\cos C$

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