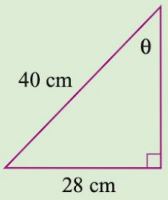
WALT use the trig ratio to find angles
Success Criteria I know my trig formulas and I can identify sides. I know how to use the inverse operation on a calculator

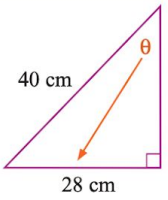
View the video first

Using trigonometry to find angles

EXAMPLE 1

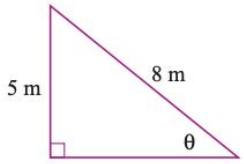
Use the sine ratio to find the value of θ to the nearest minute.



Solve	Think	Apply
$\sin\theta = \frac{\text{opposite}}{\text{hypotenuse}}$ $= \frac{28}{40}$ $\therefore \theta = 44°25'37.21\ldots''$ $\approx 44°26'$	The side opposite θ and the hypotenuse are given.  SHIFT sin (28 ÷ 40) = DMS	Press SHIFT before sin to obtain an angle.

1 Using the sine ratio, find the value of θ to the nearest minute.

a



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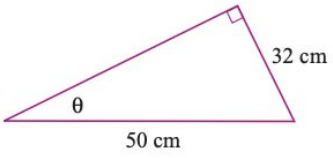

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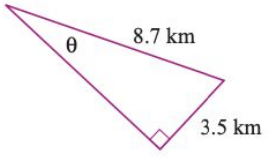

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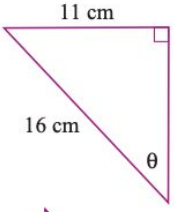

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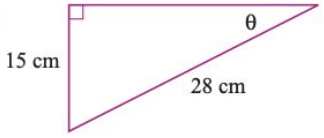

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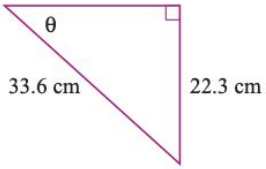

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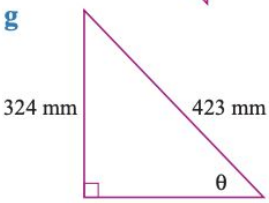

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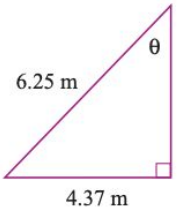

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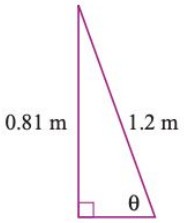
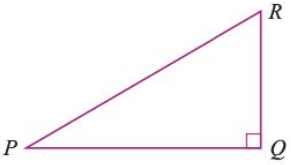
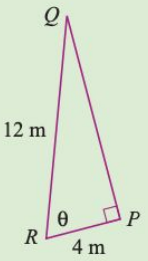


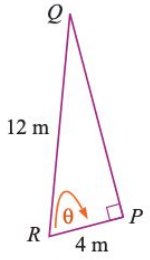
2 RQ is half as long as PR. Using the sine ratio, find the value of angle RPQ.



EXAMPLE 2

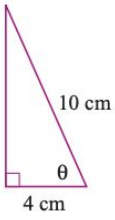
Use the cosine ratio to find the value of θ to the nearest minute.



Solve	Think	Apply
$\cos\theta = \frac{\text{adjacent}}{\text{hypotenuse}}$ $= \frac{4}{12}$ $\therefore \theta = 70°31'43.60...''$ $\approx 70°32'$	The side adjacent to θ and the hypotenuse are given.  SHIFT cos (4 ÷ 12) = DMS	Press SHIFT before cos to obtain an angle.

3 Using the cosine ratio, find the value of θ to the nearest minute.

a



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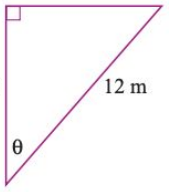

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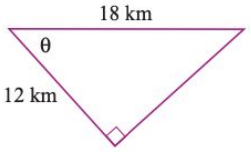

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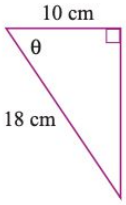

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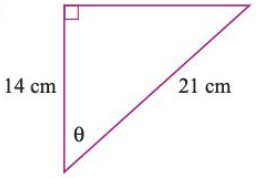

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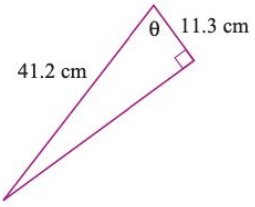

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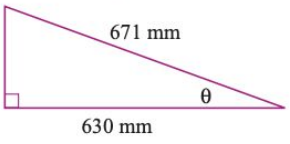

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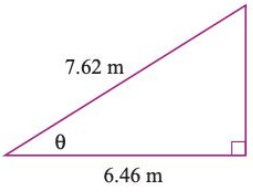

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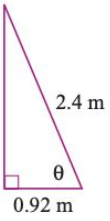
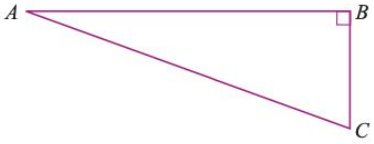
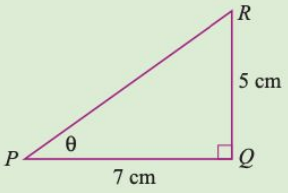


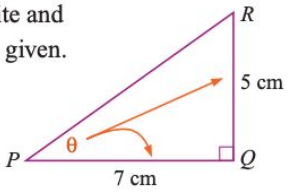
4 *AC* is three times longer than *BC*. Using the cosine ratio, find the value of angle *BCA* to the nearest minute.



EXAMPLE 3

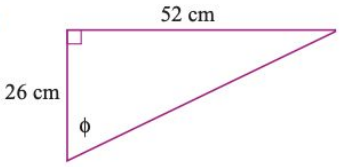
Use the tangent ratio to find the value of θ to the nearest minute.



Solve	Think	Apply
$\tan\theta = \frac{\text{opposite}}{\text{adjacent}}$ $= \frac{5}{7}$ $\therefore \theta = 35°32'15.64...''$ $\approx 35°32'$	The sides opposite and adjacent to θ are given.  SHIFT tan (5 ÷ 7) = DMS	Press SHIFT before tan to obtain an angle.

5 Using the tangent ratio, find the value of ϕ to the nearest minute.

a



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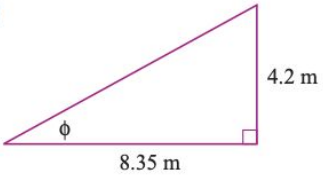
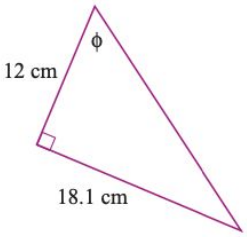
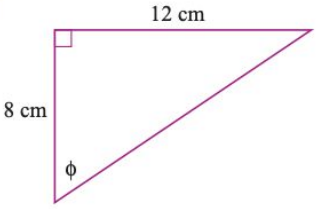


c



d



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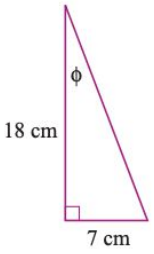

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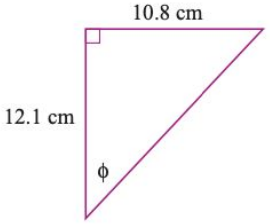

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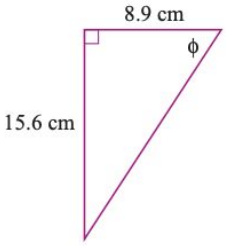

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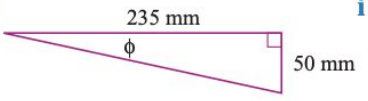

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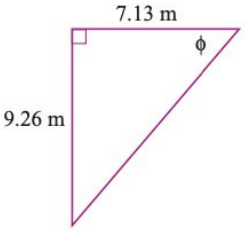
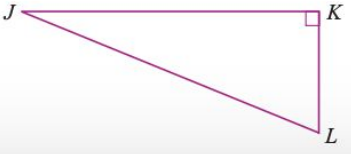
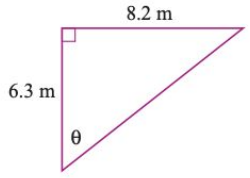


6 The ratio of *JK* to *LK* is 5 to 2. Using the tangent ratio, find the value of angle *JLK* to the nearest minute.



7 Use the sine, cosine or tangent ratios to find each unknown angle to the nearest minute.

a



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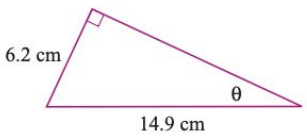

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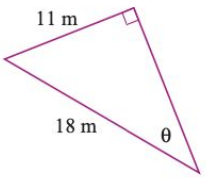

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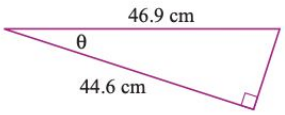

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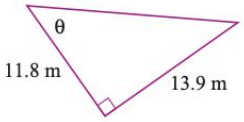

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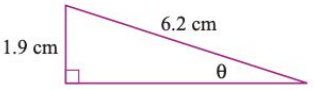

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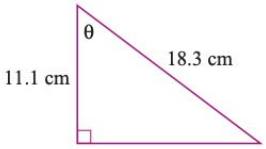

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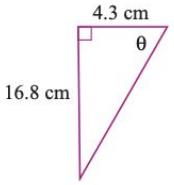

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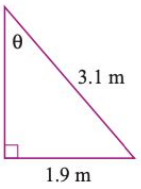

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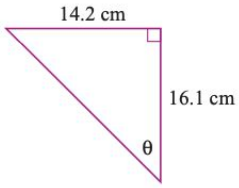

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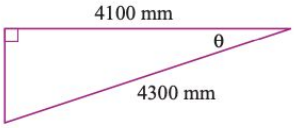

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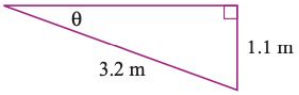

Check your answers

1 **a** 38°41′ **b** 39°48′ **c** 23°43′
d 43°26′ **e** 32°24′ **f** 41°35′
g 50°0′ **h** 44°22′ **i** 42°27′

2 30° (exact)

3 **a** 66°25′ **b** 41°25′ **c** 48°11′
d 56°15′ **e** 48°11′ **f** 74°5′
g 20°8′ **h** 32°2′ **i** 67°28′

4 70°32′

5 **a** 63°26′ **b** 26°42′ **c** 56°27′
d 56°19′ **e** 21°15′ **f** 41°45′
g 60°18′ **h** 12°1′ **i** 52°24′

6 68°12′

7 **a** 52°28′ **b** 24°35′ **c** 37°40′
d 18°1′ **e** 49°40′ **f** 17°51′
g 52°40′ **h** 75°39′ **i** 37°48′
j 41°25′ **k** 17°33′ **l** 20°6′