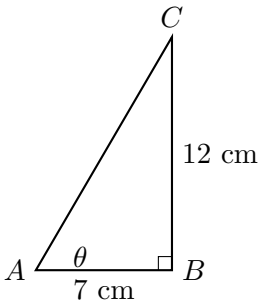
Right-Angle Trigonometry — Find a Missing Angle

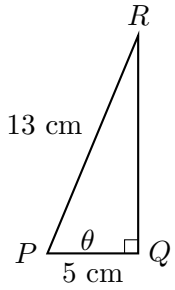
Core Worksheet

Worked Examples & Guided Practice

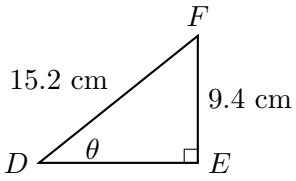
I Do (Teacher Model) In triangle ABC, angle $B = 90°$, $AB = 7$ cm, and $BC = 12$ cm. Calculate the size of angle BAC. Give your answer to 1 decimal place.



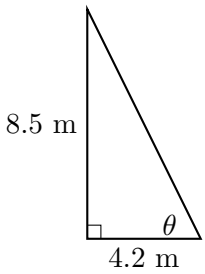
We Do (Guided Practice) In triangle PQR, angle $Q = 90°$, $PQ = 5$ cm, and $PR = 13$ cm. Calculate the size of angle QPR. Give your answer to 1 decimal place.



You Do (Independent Practice) In triangle DEF, angle $E = 90°$, $EF = 9.4$ cm, and $DF = 15.2$ cm. Calculate the size of angle EDF. Give your answer to 1 decimal place.



Challenge (Extension) A vertical flagpole is 8.5 m tall. A wire attached to the top of the pole is fixed to the ground 4.2 m from the base. Calculate the angle between the wire and the ground to 1 decimal place.



Practice Perfect Questions

Q1. In right-angled triangle ABC, $AB = 6$ cm and $BC = 8$ cm (opposite A). Calculate angle BAC to 1 d.p.

Q2. In right-angled triangle XYZ, hypotenuse $XZ = 15$ cm and adjacent side $XY = 9$ cm. Calculate angle YXZ to 1 d.p.

Q3. In right-angled triangle LMN, hypotenuse $LN = 20$ cm and opposite side $MN = 11$ cm. Calculate angle MLN to 1 d.p.

Q4. A line goes from $(0, 0)$ to $(5, 12)$. Calculate the angle this line makes with the positive x-axis to 1 d.p.

Q5. In an isosceles triangle with side lengths 10 cm, 10 cm, and base 12 cm, calculate the size of one base angle to 1 d.p.

Q6. A boat sails 15 km East and then 8 km North. Calculate the bearing of the boat from its starting point to the nearest degree.

Answers & Worked Solutions

Model Solutions

- **I Do:** $\tan(\theta) = \dfrac{12}{7} \implies \theta = \tan^{-1}\left(\dfrac{12}{7}\right) = 59.7°$
- **We Do:** $\cos(\theta) = \dfrac{5}{13} \implies \theta = \cos^{-1}\left(\dfrac{5}{13}\right) = 67.4°$
- **You Do:** $\sin(\theta) = \dfrac{9.4}{15.2} \implies \theta = \sin^{-1}\left(\dfrac{9.4}{15.2}\right) = 38.2°$
- **Challenge:** $\tan(\theta) = \dfrac{8.5}{4.2} \implies \theta = \tan^{-1}\left(\dfrac{8.5}{4.2}\right) = 63.7°$

Practice Perfect Questions Solutions

Q1. $53.1°$

Q2. $53.1°$

Q3. $33.4°$

Q4. $67.4°$

Q5. $\cos^{-1}(6/10) = 53.1°$

Q6. Bearing $= 090° - \tan^{-1}(8/15) = 062°$