

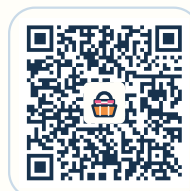
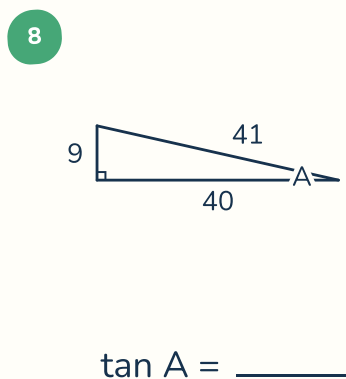
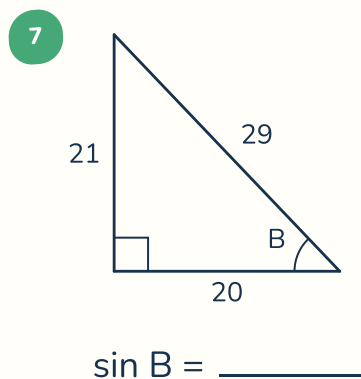
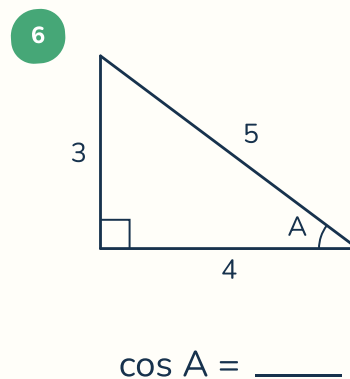
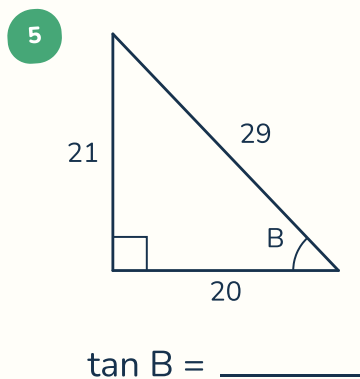
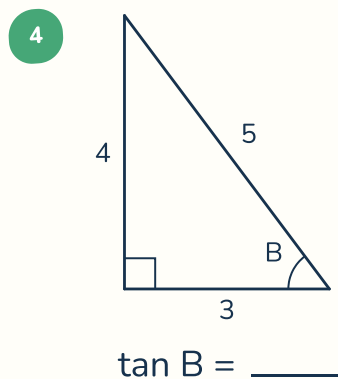
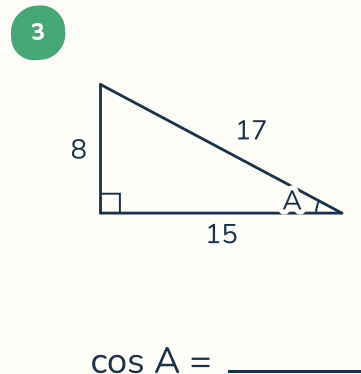
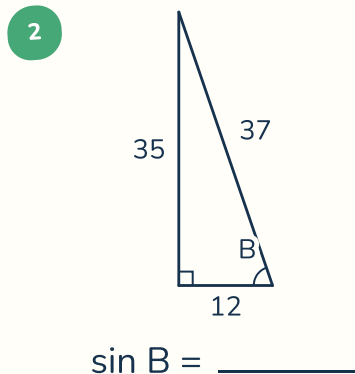
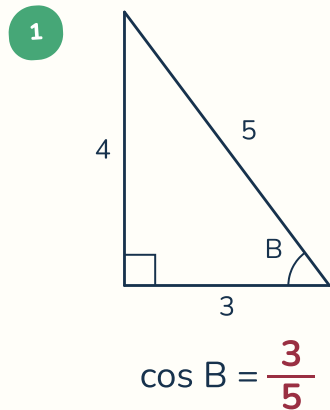
Write a trigonometric ratio — Write sine, cosine and tangent ratios

Name: _____

Date: _____



Write each ratio as a fraction. Read the sides straight off the triangle.



Right-triangle trigonometry — Find a side with trigonometry

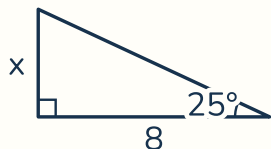
Name: _____

Date: _____



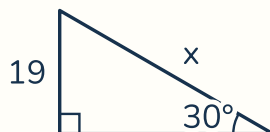
Find the side marked x, to one decimal place. Use a calculator.

1



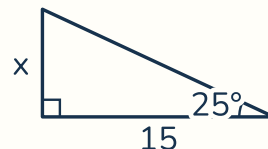
3.7 cm

2



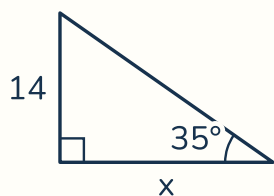
_____ cm

3



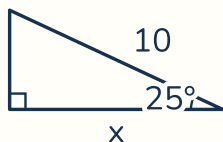
_____ cm

4



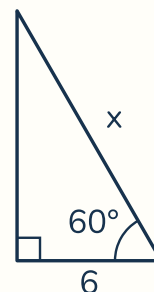
_____ cm

5



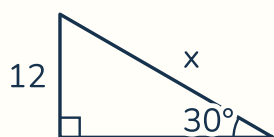
_____ cm

6



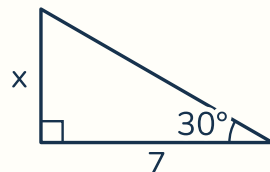
_____ cm

7



_____ cm

8



_____ cm



Right-triangle trigonometry — Find an angle with trigonometry

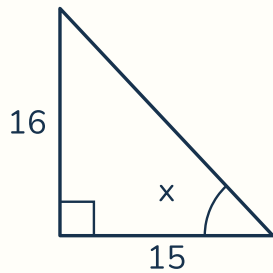
Name: _____

Date: _____



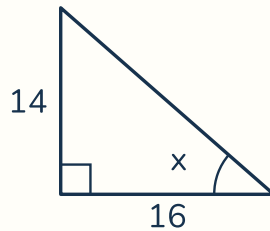
Find the angle marked x , to the nearest degree. Use a calculator.

1



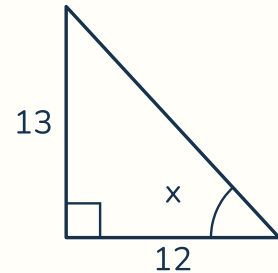
47 degrees

2



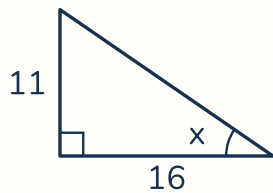
_____ degrees

3



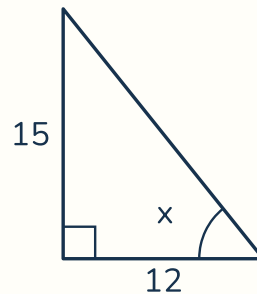
_____ degrees

4



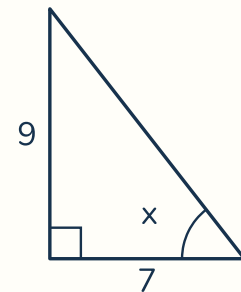
_____ degrees

5



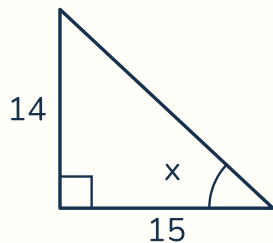
_____ degrees

6



_____ degrees

7



_____ degrees

8



_____ degrees



Laws of sines and cosines — Use the law of sines

Name: _____

Date: _____



Use the law of sines. Round each length to one decimal place.

1 In $\triangle ABC$, $a = 11$, $\angle A = 30^\circ$, $\angle B = 75^\circ$.
Find b : **21.3**

2 In $\triangle ABC$, $a = 12$, $\angle A = 40^\circ$, $\angle B = 50^\circ$.
Find b : _____

3 In $\triangle ABC$, $a = 10$, $\angle A = 50^\circ$, $\angle B = 70^\circ$.
Find b : _____

4 In $\triangle ABC$, $a = 9$, $\angle A = 45^\circ$, $\angle B = 55^\circ$.
Find b : _____

5 In $\triangle ABC$, $a = 5$, $\angle A = 55^\circ$, $\angle B = 65^\circ$.
Find b : _____

6 In $\triangle ABC$, $a = 7$, $\angle A = 50^\circ$, $\angle B = 60^\circ$.
Find b : _____

7 In $\triangle ABC$, $a = 7$, $\angle A = 40^\circ$, $\angle B = 60^\circ$.
Find b : _____

8 In $\triangle ABC$, $a = 8$, $\angle A = 35^\circ$, $\angle B = 80^\circ$.
Find b : _____



Laws of sines and cosines — Use the law of cosines

Name: _____

Date: _____



Use the law of cosines. Round each length to one decimal place.

1 In $\triangle ABC$, $a = 6$, $b = 11$, $\angle C = 35^\circ$.

Find c : **7.0**

2 In $\triangle ABC$, $a = 8$, $b = 12$, $\angle C = 50^\circ$.

Find c : _____

3 In $\triangle ABC$, $a = 10$, $b = 6$, $\angle C = 45^\circ$.

Find c : _____

4 In $\triangle ABC$, $a = 5$, $b = 8$, $\angle C = 60^\circ$. Find

c : _____

5 In $\triangle ABC$, $a = 9$, $b = 9$, $\angle C = 70^\circ$. Find

c : _____

6 In $\triangle ABC$, $a = 5$, $b = 7$, $\angle C = 80^\circ$. Find

c : _____

7 In $\triangle ABC$, $a = 12$, $b = 7$, $\angle C = 55^\circ$.

Find c : _____

8 In $\triangle ABC$, $a = 6$, $b = 9$, $\angle C = 65^\circ$. Find

c : _____



Unit circle — Convert between degrees and radians



Name: _____

Date: _____

Convert between degrees and radians. Leave radians in terms of π .

1 60° in radians = $\frac{\pi}{3}$

2 30° in radians = _____

3 300° in radians = _____

4 210° in radians = _____

5 $\frac{5\pi}{4}$ in degrees = _____

6 $\frac{3\pi}{4}$ in degrees = _____

7 225° in radians = _____

8 $\frac{\pi}{2}$ in degrees = _____



Unit circle — Read exact values off the unit circle

Name: _____

Date: _____



Give each exact value. Leave surds and fractions exact — no calculator.

1 $\sin 90^\circ = 1$

2 $\cos 60^\circ = \underline{\hspace{2cm}}$

3 $\tan 0^\circ = \underline{\hspace{2cm}}$

4 $\cos 30^\circ = \underline{\hspace{2cm}}$

5 $\tan 60^\circ = \underline{\hspace{2cm}}$

6 $\sin 60^\circ = \underline{\hspace{2cm}}$

7 $\sin 45^\circ = \underline{\hspace{2cm}}$

8 $\cos 90^\circ = \underline{\hspace{2cm}}$



Trigonometric identities — Use the Pythagorean identity

Name: _____

Date: _____



Use $\sin^2 A + \cos^2 A = 1$. Each answer is a fraction in lowest terms.

1 If $\sin A = \frac{3}{5}$, $\cos A = \frac{4}{5}$

2 If $\cos A = \frac{15}{17}$, $\sin A = \underline{\hspace{2cm}}$

3 If $\sin A = \frac{7}{25}$, $\cos A = \underline{\hspace{2cm}}$

4 If $\sin A = \frac{8}{17}$, $\cos A = \underline{\hspace{2cm}}$

5 If $\sin A = \frac{20}{29}$, $\cos A = \underline{\hspace{2cm}}$

6 If $\cos A = \frac{21}{29}$, $\sin A = \underline{\hspace{2cm}}$

7 If $\sin A = \frac{9}{41}$, $\cos A = \underline{\hspace{2cm}}$

8 If $\cos A = \frac{4}{5}$, $\sin A = \underline{\hspace{2cm}}$



Power Pack · Trigonometry — Answer key



Trig ratios

- | | | | |
|---|---|---|---|
| 1. $\cos B$ (legs 4, 3, hyp 5) = $3/5$ | 2. $\sin B$ (legs 35, 12, hyp 37) = $35/37$ | 3. $\cos A$ (legs 8, 15, hyp 17) = $15/17$ | 4. $\tan B$ (legs 4, 3, hyp 5) = $4/3$ |
| 5. $\tan B$ (legs 21, 20, hyp 29) = $21/20$ | 6. $\cos A$ (legs 3, 4, hyp 5) = $4/5$ | 7. $\sin B$ (legs 21, 20, hyp 29) = $21/29$ | 8. $\tan A$ (legs 9, 40, hyp 41) = $9/40$ |

Finding a side

- | | | | |
|--|---|---|---|
| 1. 25° , adj 8 $\rightarrow$ opp $x = 3.7$ | 2. 30° , opp 19 $\rightarrow$ hyp $x = 38$ | 3. 25° , adj 15 $\rightarrow$ opp $x = 7$ | 4. 35° , opp 14 $\rightarrow$ adj $x = 20$ |
| 5. 25° , hyp 10 $\rightarrow$ adj $x = 9.1$ | 6. 60° , adj 6 $\rightarrow$ hyp $x = 12$ | 7. 30° , opp 12 $\rightarrow$ hyp $x = 24$ | 8. 30° , adj 7 $\rightarrow$ opp $x = 4$ |

Finding an angle

- | | | | |
|--|--|--|--|
| 1. opp 16, adj 15 $\rightarrow x = 47^\circ$ | 2. opp 14, adj 16 $\rightarrow x = 41^\circ$ | 3. opp 13, adj 12 $\rightarrow x = 47^\circ$ | 4. opp 11, adj 16 $\rightarrow x = 35^\circ$ |
| 5. opp 15, adj 12 $\rightarrow x = 51^\circ$ | 6. opp 9, adj 7 $\rightarrow x = 52^\circ$ | 7. opp 14, adj 15 $\rightarrow x = 43^\circ$ | 8. opp 10, adj 3 $\rightarrow x = 73^\circ$ |

The sine rule

- | | | | |
|--|--|--|---|
| 1. In $\triangle ABC$, $a = 11$, $\angle A = 30^\circ$, $\angle B = 75^\circ$. Find b : 21.3 | 2. In $\triangle ABC$, $a = 12$, $\angle A = 40^\circ$, $\angle B = 50^\circ$. Find b : 14.3 | 3. In $\triangle ABC$, $a = 10$, $\angle A = 50^\circ$, $\angle B = 70^\circ$. Find b : 12.3 | 4. In $\triangle ABC$, $a = 9$, $\angle A = 45^\circ$, $\angle B = 55^\circ$. Find b : 10.4 |
| 5. In $\triangle ABC$, $a = 5$, $\angle A = 55^\circ$, $\angle B = 65^\circ$. Find b : 5.5 | 6. In $\triangle ABC$, $a = 7$, $\angle A = 50^\circ$, $\angle B = 60^\circ$. Find b : 7.9 | 7. In $\triangle ABC$, $a = 7$, $\angle A = 40^\circ$, $\angle B = 60^\circ$. Find b : 9.4 | 8. In $\triangle ABC$, $a = 8$, $\angle A = 35^\circ$, $\angle B = 80^\circ$. Find b : 13.7 |

The cosine rule

- | | | | |
|---|---|---|--|
| 1. In $\triangle ABC$, $a = 6$, $b = 11$, $\angle C = 35^\circ$. Find c : 7.0 | 2. In $\triangle ABC$, $a = 8$, $b = 12$, $\angle C = 50^\circ$. Find c : 9.2 | 3. In $\triangle ABC$, $a = 10$, $b = 6$, $\angle C = 45^\circ$. Find c : 7.2 | 4. In $\triangle ABC$, $a = 5$, $b = 8$, $\angle C = 60^\circ$. Find c : 7.0 |
| 5. In $\triangle ABC$, $a = 9$, $b = 9$, $\angle C = 70^\circ$. Find c : 10.3 | 6. In $\triangle ABC$, $a = 5$, $b = 7$, $\angle C = 80^\circ$. Find c : 7.9 | 7. In $\triangle ABC$, $a = 12$, $b = 7$, $\angle C = 55^\circ$. Find c : 9.8 | 8. In $\triangle ABC$, $a = 6$, $b = 9$, $\angle C = 65^\circ$. Find c : 8.4 |

Degrees and radians

- | | | | |
|------------------------------------|------------------------------------|--------------------------------------|--------------------------------------|
| 1. 60° in radians = $\pi/3$ | 2. 30° in radians = $\pi/6$ | 3. 300° in radians = $5\pi/3$ | 4. 210° in radians = $7\pi/6$ |
|------------------------------------|------------------------------------|--------------------------------------|--------------------------------------|

Power Pack · Trigonometry — Answer key



Degrees and radians

5. $5\pi/4$ in degrees = 225°

6. $3\pi/4$ in degrees = 135°

7. 225° in radians = $5\pi/4$

8. $\pi/2$ in degrees = 90°

Values on the unit circle

1. $\sin 90^\circ = 1$

2. $\cos 60^\circ = 1/2$

3. $\tan 0^\circ = 0$

4. $\cos 30^\circ = \sqrt{3}/2$

5. $\tan 60^\circ = \sqrt{3}$

6. $\sin 60^\circ = \sqrt{3}/2$

7. $\sin 45^\circ = \sqrt{2}/2$

8. $\cos 90^\circ = 0$

Trig identities

1. If $\sin A = 3/5$, $\cos A = 4/5$

2. If $\cos A = 15/17$, $\sin A = 8/17$

3. If $\sin A = 7/25$, $\cos A = 24/25$

4. If $\sin A = 8/17$, $\cos A = 15/17$

5. If $\sin A = 20/29$, $\cos A = 21/29$

6. If $\cos A = 21/29$, $\sin A = 20/29$

7. If $\sin A = 9/41$, $\cos A = 40/41$

8. If $\cos A = 4/5$, $\sin A = 3/5$