Exact Trig Values - Worksheet

Skill

Group A - Sine

Write down the exact trig values for:

1) $\sin(0)$ **2)** $\sin(30)$ **3)** $\sin(45)$

4) $\sin(60)$ **5)** $\sin(90)$

Group B - Cosine

Write down the exact trig values for:

1) $\cos(0)$ **2)** $\cos(30)$ **3)** $\cos(45)$

4) $\cos(60)$ **5)** $\cos(90)$

Group C - Tangent

Write down the exact trig values for:

1) $\tan(0)$ **2)** $\tan(30)$ **3)** $\tan(45)$

4) $\tan(60)$

Exact Trig Values - Worksheet

Applied

1) **(a)** Find the exact value of $\cos(0) + \sin(90)$.

(b) Find the exact value of $\cos(30) + \sin(60)$.

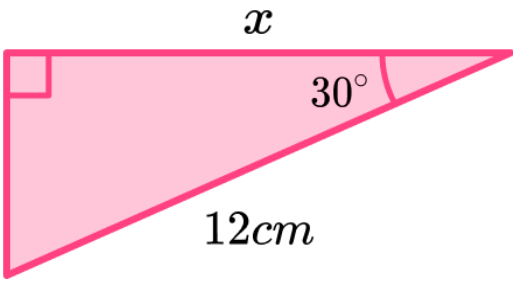
2) **(a)** Find the exact value of $\tan(45) + \sin(45)$.
Write your answer as a single fraction.

(b) Find the exact value of $\sin(30) + \tan(60)$.
Write your answer as a single fraction.

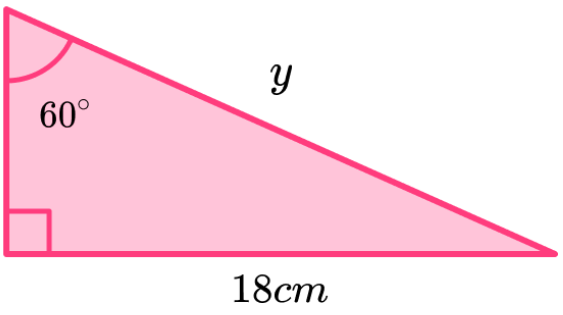
3) **(a)** Find the exact value of $4\cos(60)$.

(b) Find the exact value of $15\tan(30)$.

4) **(a)** Use trigonometry in the diagram below to show that $x = 6\sqrt{3}$



(b) Use trigonometry in the diagram below to show that $y = 12\sqrt{3}$



Exact Trig Values - Exam Questions

1) What is the exact value of $\tan(30)$? Circle your answer.

$\frac{\sqrt{2}}{2}$ $\frac{1}{2}$ $\frac{\sqrt{3}}{3}$ $\sqrt{3}$

(1 mark)

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2) Calculate the exact value of $\sin(60) + \tan(60)$.
Simplify your answer by writing it as a single term.

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(2 marks)

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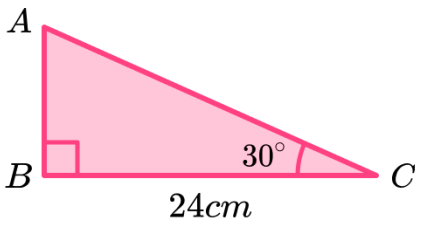
3) Use trigonometry to show that AB is $8\sqrt{3}$. Diagram NOT to scale.



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(2 marks)

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4) The diagram shows a right-angled triangle.

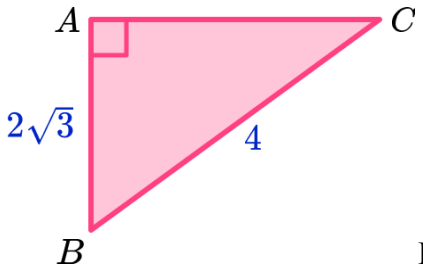

Diagram NOT to scale.

Use trigonometry to show that angle ABC is 30^o.

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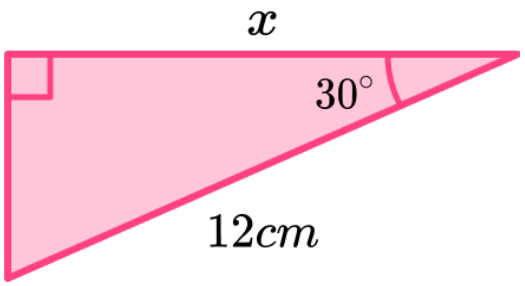
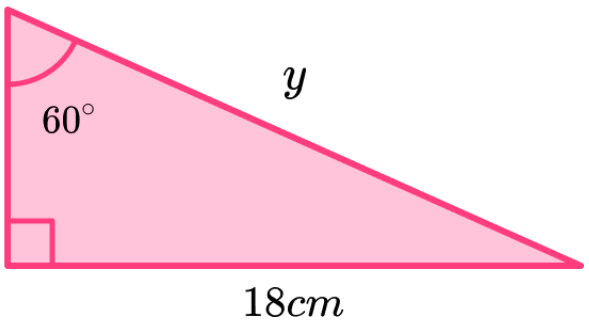
(2 marks)

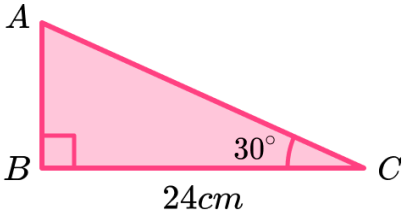
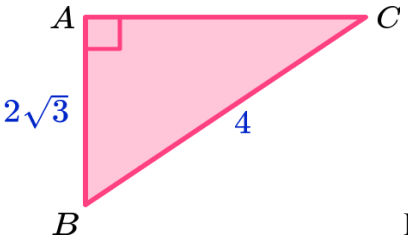
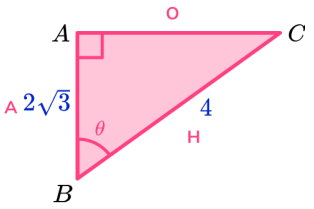
Exact Trig Values - Answers

	Question	Answer
	Skill Questions	
Group A	Write down the exact trig values for: **1)** $\sin(0)$ **2)** $\sin(30)$ **3)** $\sin(45)$ **4)** $\sin(60)$ **5)** $\sin(90)$	 **1)** 0 **2)** $\frac{1}{2}$ **3)** $\frac{\sqrt{2}}{2}$ (or $\frac{1}{\sqrt{2}}$) **4)** $\frac{\sqrt{3}}{2}$ **5)** 1
Group B	Write down the exact trig values for: **1)** $\cos(0)$ **2)** $\cos(30)$ **3)** $\cos(45)$ **4)** $\cos(60)$ **5)** $\cos(90)$	 **1)** 1 **2)** $\frac{\sqrt{3}}{2}$ **3)** $\frac{\sqrt{2}}{2}$ (or $\frac{1}{\sqrt{2}}$) **4)** $\frac{1}{2}$ **5)** 0
Group C	Write down the exact trig values for: **1)** $\tan(0)$ **2)** $\tan(30)$ **3)** $\tan(45)$ **4)** $\tan(60)$	 **1)** 0 **2)** $\frac{\sqrt{3}}{3}$ (or $\frac{1}{\sqrt{3}}$) **3)** 1 **4)** $\sqrt{3}$

Exact Trig Values - Answers

	Question	Answer
	Applied Questions	
1)	a) Find the exact value of $\cos(0) + \sin(90)$.	a) $1 + 1 = 2$
	b) Find the exact value of $\cos(30) + \sin(60)$.	b) $\frac{\sqrt{3}}{2} + \frac{\sqrt{3}}{2} = \sqrt{3}$
2)	a) Find the exact value of $\tan(45) + \sin(45)$. Write your answer as a single fraction.	a) $1 + \frac{\sqrt{2}}{2} = \frac{2+\sqrt{2}}{2}$
	b) Find the exact value of $\sin(30) + \tan(60)$. Write your answer as a single fraction.	b) $\frac{1}{2} + \sqrt{3} = \frac{1+2\sqrt{3}}{2}$
3)	a) Find the exact value of $4\cos(60)$.	a) $4 \times \frac{1}{2} = 2$
	b) Find the exact value of $15\tan(30)$.	b) $15 \times \frac{\sqrt{3}}{3} = 5\sqrt{3}$
4)	a) Use trigonometry in the diagram below to show that $x = 6\sqrt{3}$ 	a) $\cos(\theta) = \frac{Adjacent}{Hypotenuse}$ $\cos(30) = \frac{x}{12}$ $x = 12 \times \cos(30)$ $= 12 \times \frac{\sqrt{3}}{2} = 6\sqrt{3}$
	b) Use trigonometry in the diagram below to show that $y = 12\sqrt{3}$ 	b) $\sin(\theta) = \frac{Opposite}{Hypotenuse}$ $\sin(60) = \frac{18}{y}$ $y = 18 \div \sin(60)$ $= 18 \div \frac{\sqrt{3}}{2} = 12\sqrt{3}$

Exact Trig Values - Mark Scheme

	Question	Answer	
	Exam Questions		
1)	What is the exact value of tan(30)? Circle your answer. $\frac{\sqrt{2}}{2}$ $\frac{1}{2}$ $\frac{\sqrt{3}}{3}$ $\sqrt{3}$	$\frac{\sqrt{3}}{3}$	(1)
2)	Calculate the exact value of $\sin(60) + \tan(60)$. Simplify your answer by writing it as a single term.	$\frac{\sqrt{3}}{2} + \sqrt{3}$ $= \frac{3\sqrt{3}}{2}$	(1) (1)
3)	Use trigonometry to show that AB is $8\sqrt{3}\ cm$.  Diagram NOT to scale.	$\tan(\theta) = \frac{Opposite}{Adjacent}$ $\tan(30) = \frac{\sqrt{3}}{3}$ $AB = 24 \times \frac{\sqrt{3}}{3} = 8\sqrt{3}$	 (1) (1)
4)	The diagram shows a right-angled triangle.  Diagram NOT to scale. Use trigonometry to show that ABC is 30^o.	 $\cos(\theta) = \frac{Adjacent}{Hypotenuse}$ $\cos(ABC) = \frac{2\sqrt{3}}{4} = \frac{\sqrt{3}}{2}$ $\cos(30) = \frac{\sqrt{3}}{2}$ So ABC is 30^o	 (1) (1)