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| **Topic/Skill**  | **Definition/Tips** | **Example****Topic: Trigonometry**  |
| 1. Exact Values for Angles in Trigonometry |

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| --- | --- | --- | --- | --- | --- |
|  | **0°** | **30°** | **45°** | **60°** | **90°** |
| **sin** | **0** | $$\frac{1}{2}$$ | $$\frac{\sqrt{2}}{2}$$ | $$\frac{\sqrt{3}}{2}$$ | **1** |
| **cos** | **1** | $$\frac{\sqrt{3}}{2}$$ | $$\frac{\sqrt{2}}{2}$$ | $$\frac{1}{2}$$ | **0** |
| **tan**  | **0** | $$\frac{1}{\sqrt{3}}$$ | **1** | $$\sqrt{3}$$ | **----** |

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| 2. Sine Rule | Use with **non right angle triangles**.Use when the question involves **2 sides and 2 angles**.For missing side:$$\frac{a}{\sin(A)}=\frac{b}{\sin(B)}$$For missing angle:$$\frac{\sin(A)}{a}=\frac{\sin(B)}{b}$$There is an **ambiguous case** (where there are two potential answers)To find the two angles, use **sine** to find one, and then **subtract your answer from 180** to find the other answer. | $$\frac{x}{\sin(85)}=\frac{5.2}{\sin(46)}$$$$x=\frac{5.2×\sin(85)}{\sin(46)}=3.75cm$$$$\frac{\sin(θ)}{1.9}=\frac{\sin(85)}{2.4}$$$$\sin(θ)=\frac{1.9×\sin(85)}{2.4}=0.789$$$$θ=sin^{-1}\left(0.789\right)=52.1°$$ |
| 3. Cosine Rule | Use with **non right angle triangles**.Use when the question involves **3 sides and 1 angle**.For missing side:$$a^{2}=b^{2}+c^{2}-2bccosA$$For missing angle:$$\cos(A=\frac{b^{2}+c^{2}-a^{2}}{2bc})$$ | $$x^{2}=9.6^{2}+7.8^{2}-(2×9.6×7.8×\cos(85))$$$$x=11.8$$$$\cos(θ=\frac{7.2^{2}+8.1^{2}-6.6^{2}}{2×7.2×8.1})$$$$θ=50.7°$$ |
| 4. Graphs of Trigonometric Functions |  |  |
| 5. Area of a Triangle | Use when given the **length of two sides and the included angle**.$$Area of a Triangle=\frac{1}{2}ab\sin(C) $$ | trig area example$$A=\frac{1}{2}ab\sin(C)$$$$A=\frac{1}{2}×7×10×\sin(25)$$$$A=14.8$$ |

**Knowledge Organiser**