

$b=10 \quad c=16$

$\frac{b}{c} = \frac{5}{8}$

$b=20 \quad c=32$

$\frac{b}{c} = \frac{5}{8}$
ratio

26) $A = 60^\circ$, $b:c = 5:8 \Rightarrow \frac{b}{c} = \frac{5}{8}$ $b = 5x$ $c = 8x$

$A = \pi r^2 = 147\pi$ $r = 7\sqrt{3} \text{ cm}$

$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2r$

$\frac{a}{\sin 60} = \frac{5x}{\sin B} = \frac{8x}{\sin C} = 2 * 7\sqrt{3} = 14\sqrt{3}$

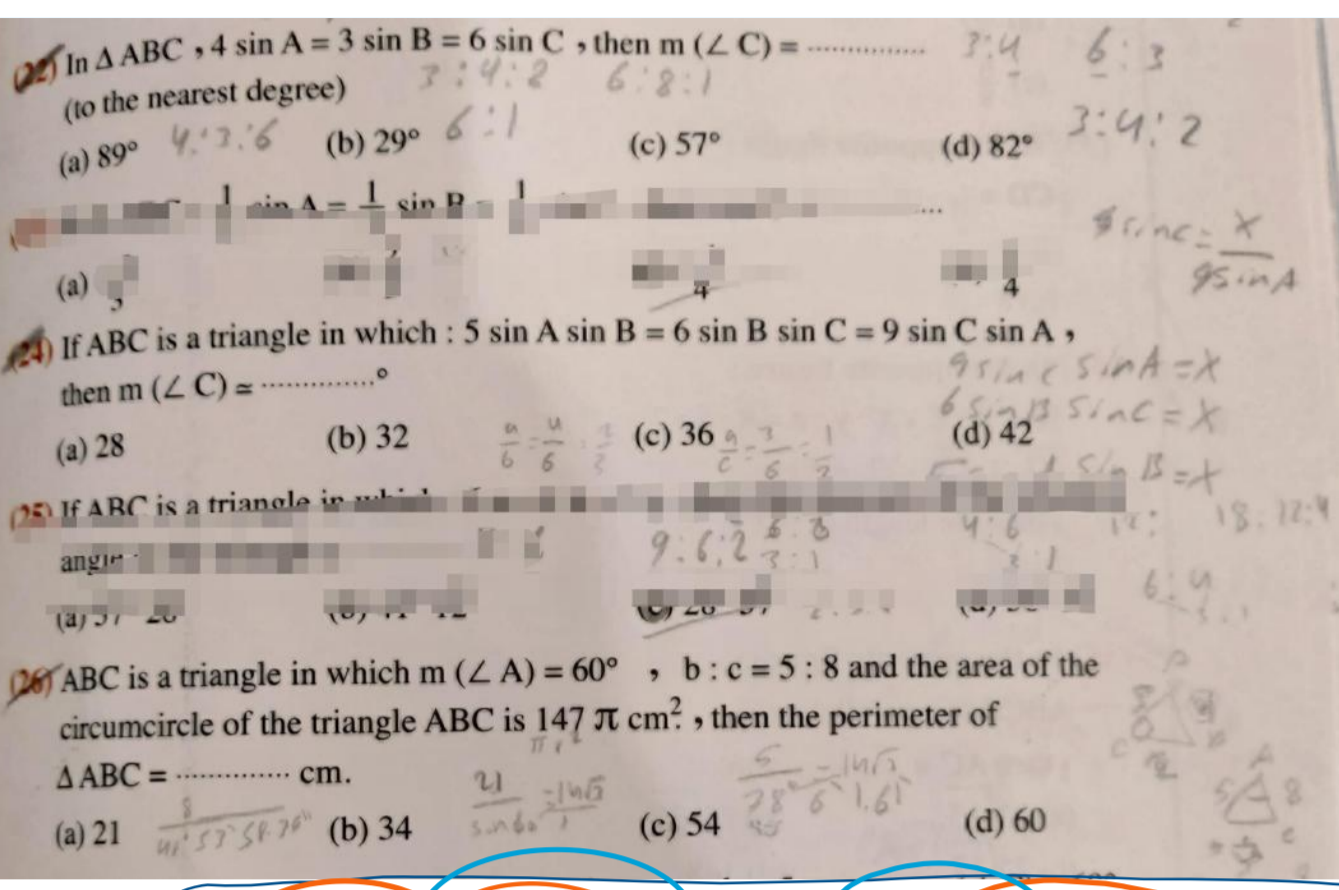
$a = 21$
 $b = ?$
 $c = ?$

$a = 14\sqrt{3} * \sin 60 = 21$

$a^2 = b^2 + c^2 - 2bc \sin A$

$(21)^2 = (5x)^2 + (8x)^2 - 2 * 5x * 8x (\sin 60)$

$441 = 25x^2 + 16x^2 - 80x^2 * \frac{\sqrt{3}}{2}$ $x = \checkmark$



$$m(\angle C) = ?$$

$$24 \quad \frac{5 \sin A \sin B}{\sin A} = \frac{6 \sin B \sin C}{\sin A} = \frac{9 \sin C \sin A}{\sin A}$$

$$5 \sin B = \frac{6 \sin B \sin C}{\sin A} = 9 \sin C$$

$$5 \sin B = 9 \sin C$$

$$\frac{\sin B}{\sin C} = \frac{9}{5}$$

$$\frac{b}{c} = \frac{9}{5}$$

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\frac{\sin B}{\sin C} = \frac{b}{c}$$

$$b = \frac{9}{5}c$$

$$\cos C = \frac{a^2 + b^2 - c^2}{2ab}$$

$$= \frac{(\frac{5}{6}c)^2 + (\frac{9}{5}c)^2 - c^2}{2 \times \frac{5}{6} \times \frac{9}{5}c^2}$$

$$= \frac{2 \times \frac{5}{6} \times \frac{9}{5}c^2}{2 \times \frac{5}{6} \times \frac{9}{5}c^2}$$

$$\frac{5 \sin A \sin B}{\sin B} = \frac{6 \sin B \sin C}{\sin B} = \frac{9 \sin C \sin A}{\sin B}$$

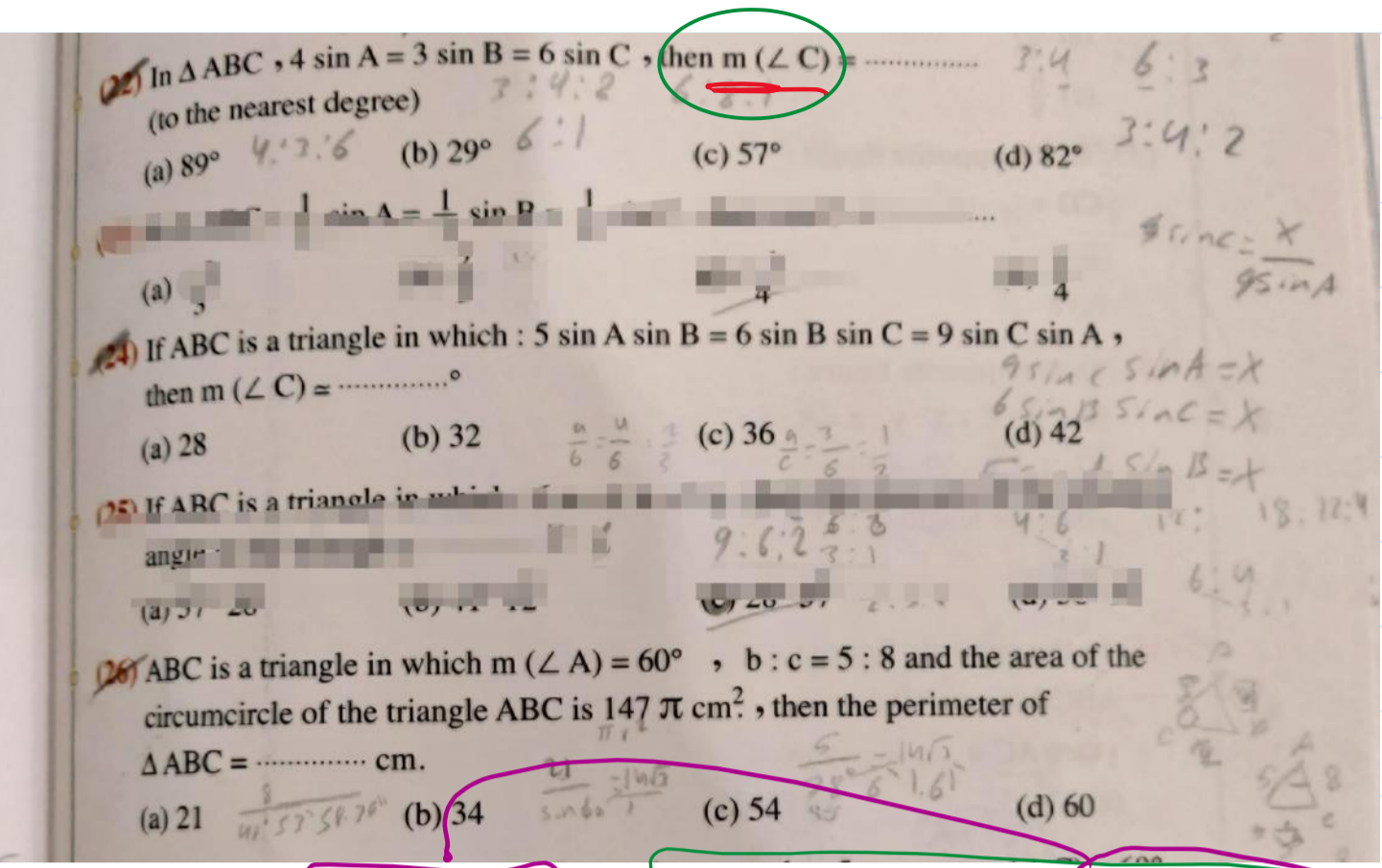
$$5 \sin A = 6 \sin C$$

$$\frac{\sin A}{\sin C} = \frac{6}{5} = \frac{a}{c}$$

$$a = \frac{5}{6}c$$

$$\cos C = \frac{(\frac{5}{6})^2 + (\frac{9}{5})^2 - 1}{2 \times \frac{5}{6} \times \frac{9}{5}}$$

$$m(\angle C) = \checkmark$$



22 $4 \sin A = 3 \sin B = 6 \sin C$

$$\frac{\sin A}{\sin C} = \frac{6}{4} = \frac{3}{2}$$

$$a = \frac{6}{4}c$$

$$\frac{\sin B}{\sin C} = \frac{6}{3} = \frac{b}{c}$$

$$b = \frac{6}{3}c$$

$\cos C =$

ABCD is a quadrilateral in which $\angle A = 90^\circ$, $\angle C = 90^\circ$, $AB = AD = 10$ cm. $BD = BC$ Calculate the area of the quadrilateral ABCD

44 In any triangle ABC, prove that :

(1) $\frac{3a - 4b}{3 \sin A - 4 \sin B} = \frac{c}{\sin C}$

(2) The area of the triangle = $\frac{a^2 \sin B \sin C}{2 \sin A}$

(3) The area of the triangle = $\frac{abc}{4r}$

“where r is the radius length of the circumcircle of the triangle ABC”

Try & error

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$\sin A = \frac{a \sin B}{b}$$

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① L.H.S = $\frac{3a - 4b}{3 \sin A - 4 \sin B} = \frac{3a - 4b}{3 \left(\frac{a \sin B}{b} \right) - 4 \sin B}$

$\frac{3a - 4b}{\frac{3a \sin B - 4b \sin B}{b}} = \frac{b(3a - 4b)}{3a \sin B - 4b \sin B} = \frac{b}{\sin B} = \frac{c}{\sin C} = \text{R.H.S}$

$$A = \frac{1}{2} (\text{side}_1 \times \text{side}_2) \sin(\text{angle})$$

$$b = \frac{a \sin B}{\sin A}$$

$$\therefore A = \frac{1}{2} ab \sin C$$

$$= \frac{1}{2} a \frac{a \sin B}{\sin A} \sin C = \frac{a^2 \sin B \sin C}{2 \sin A}$$

ABCD is a quadrilateral in which $\angle A + \angle C = 180^\circ$ and $\angle B + \angle D = 180^\circ$.
 , $AB = AD = 10$ cm. , $BD = BC$ Calculate the area of the quadrilateral ABCD «

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(1) $\frac{3a - 4b}{3 \sin A - 4 \sin B} = \frac{c}{\sin C}$

(2) The area of the triangle = $\frac{a^2 \sin B \sin C}{2 \sin A}$

(3) The area of the triangle = $\frac{abc}{4r}$
 "where r is the radius length of the circumcircle of the triangle ABC"

$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C} = 2R$

$\frac{c}{\sin C} \rightarrow 2R$

$\sin C = \frac{c}{2R}$

$A = \frac{1}{2} ab \sin C = \frac{1}{2} ab \frac{c}{2r} = \frac{abc}{4r}$