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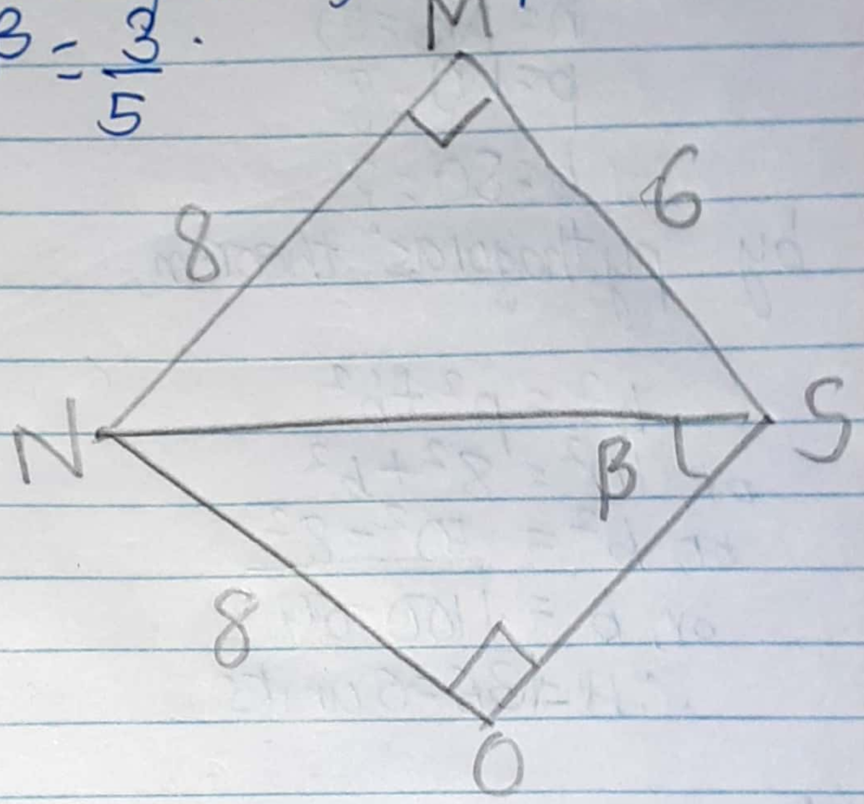
iii) From the given figures prove that $\cos\beta = \frac{3}{5}$.

a)



→ Soln,

Here,

In ΔMNS,

$h = ? = NS$

$p = 8$

$b = 6$

By pythagoras theorem,

$h^2 = p^2 + b^2$

or, $h = \sqrt{p^2 + b^2}$

$= \sqrt{8^2 + 6^2}$

$= \sqrt{64 + 36}$

$= \sqrt{100} = 10$ units

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In ΔNSO,

$h = NS = 10$

$p = NO = 8$

$b = SO = ?$

by pythagoras' theorem,

$h^2 = p^2 + b^2$

or, $10^2 = 8^2 + b^2$

or, $b^2 = \overline{10^2 - 8^2}$

or, $b = \sqrt{100 - 64}$

$\therefore b = \sqrt{36} = 6$ units

Now,

~~Ei~~ To prove $\cos\beta = \frac{3}{5}$,

L.H.S $= \cos\beta$

$= \frac{b}{h}$

$= \frac{\cancel{6}\,3}{\cancel{10}\,5}$

$= \frac{3}{5}$ proved.

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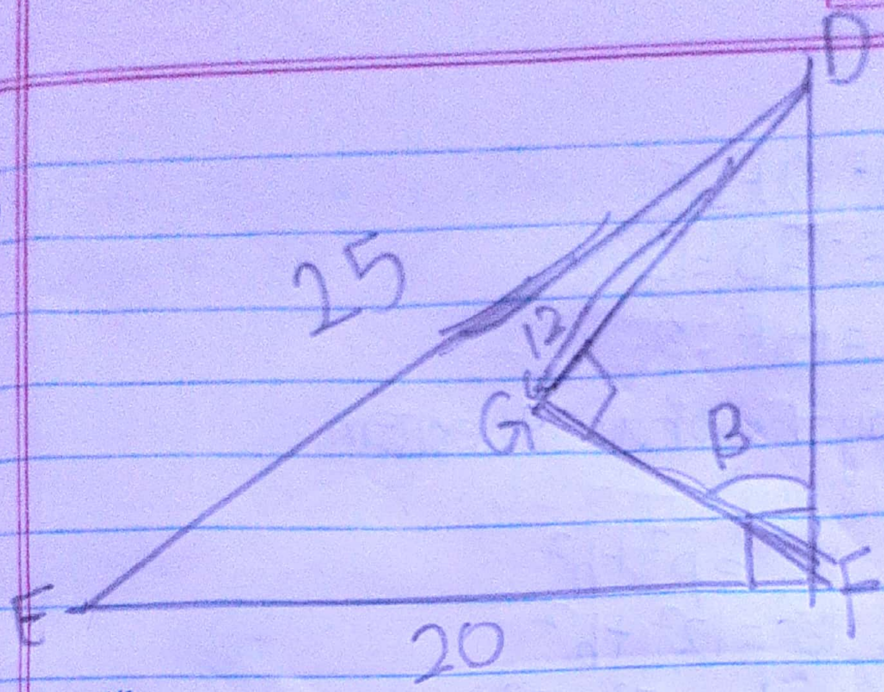
b)



→ Sol^n,

Here,

In ΔDEF,

$h = 25 = DE$

$p = ? = DF$

$b = 20 = EF$

by pythagoras theorem,

$h^2 = p^2 + b^2$

or, $25^2 = p^2 + 20^2$

or, $p = \sqrt{25^2 - 20^2}$

or, $p = \sqrt{625 - 400}$

or, $p = \sqrt{225}$

$\therefore p = 15$ units

In ΔGOF,

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$h = DF = 15$
$p = GD = 12$
$b = GF = ?$

by pythagoras theorem,

$h^2 = p^2 + b^2$
or, $15^2 = 12^2 + b^2$
or, $b^2 = 15^2 - 12^2$
or, $b = \sqrt{15^2 - 12^2}$
or, $b = \sqrt{225 - 144}$
or, $b = \sqrt{81}$
$\therefore b = 9$

Now,

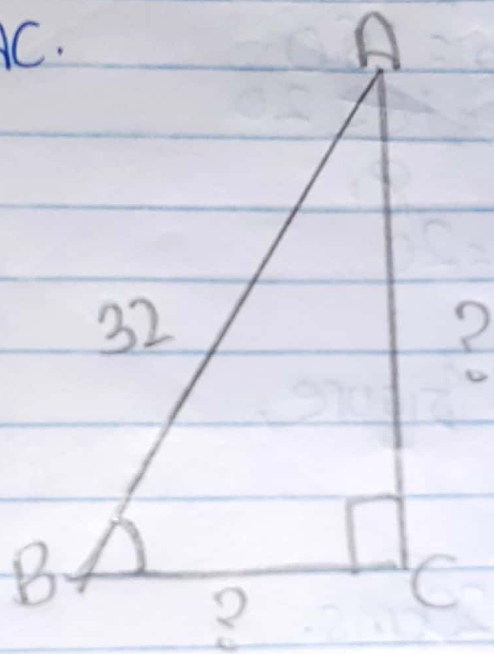
To prove: $\cos\beta = \frac{3}{5}$

L.H.S $= \cos\beta$
$= \frac{b}{h}$
$= \frac{\cancel{9}\,3}{\cancel{15}\,5}$
$= \frac{3}{5}$

proved

6.) In a right angled triangle, right angle at C, if AB = 32 cms and $\sin B = \frac{5}{8}$,

find AC.



-> Soln

Here,

In $\triangle ABC$, [Taking B as reference angle]

$h = AB = 32$

$p = AC = ?$

$b = BC = ?$

$\sin B = \frac{5}{8}$

or, $\frac{p}{h} = \frac{5}{8}$

Now,

Keeping values,

$$\frac{p}{32} = \frac{5}{8}$$

or, $p \times 8 = 5 \times 32$

or, $8p = 160$

or, $p = \frac{\cancel{160}\ 20}{\cancel{8}\ 1}$

$\therefore p = 20$

According to figure,

$p = AC$

$\therefore AC = 20cms.$

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