

$$a^2 + b^2 = c^2$$

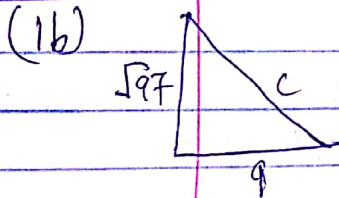
$$6^2 + b^2 = 19^2$$

$$b^2 = \sqrt{19^2 - 6^2}$$

$$b^2 = 361 - 36$$

$$b = \sqrt{325}$$

$$= 5\sqrt{13}$$



$$a^2 + b^2 = c^2$$

$$c^2 = (\sqrt{97})^2 + 9^2$$

$$c^2 = 97 + 81$$

$$c = \sqrt{178}$$

$$c = \sqrt{178}$$

2a $a^2 + b^2 \neq c^2$ $a^2 + b^2 = c^2$

$$1.6^2 + 3^2 = 3.4^2$$

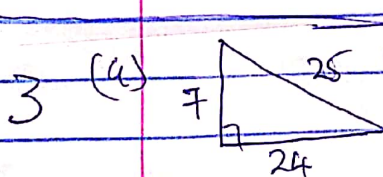
$$11.56 = 11.56$$

The set is Pythagorean Triple because it fits the rule $a^2 + b^2 = c^2$

2b $9^2 + 12^2 \neq 14^2$
 $225 \neq 196$

It is not Pythagorean Triple because it does not fit the rule $a^2 + b^2 = c^2$

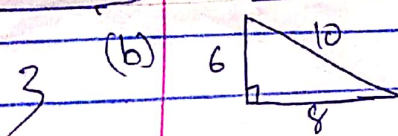
2c $a^2 + b^2 = 24^2 + 45^2 = 2601$ The set is Pythagorean Triple
 $c^2 = 51^2 = 2601$ because it fits the rule $a^2 + b^2 = c^2$
 $2601 = 2601$



$$25^2 = 7^2 + 24^2 = 625 = a^2 + b^2 \text{ therefore } 7^2 + 24^2 = 25^2$$

$$25^2 = 625 = c^2$$

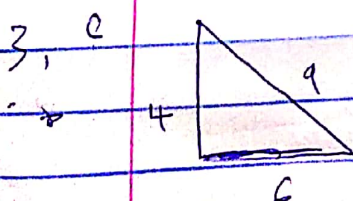
It is a right angled triangle.



$$a^2 + b^2 = 6^2 + 8^2 = 100 \text{ therefore } 6^2 + 8^2 = 10^2$$

$$c^2 = 10^2 = 100$$

It is a right angled triangle.

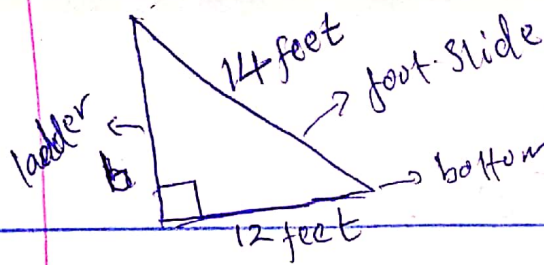


$$a^2 + b^2 = 52$$

$$c^2 = 81$$

It does not fit rule $a^2 + b^2 = c^2$.
all sides are different sizes hence
it is a Scalene Triangle.

4a.



$$a^2 + b^2 = c^2$$

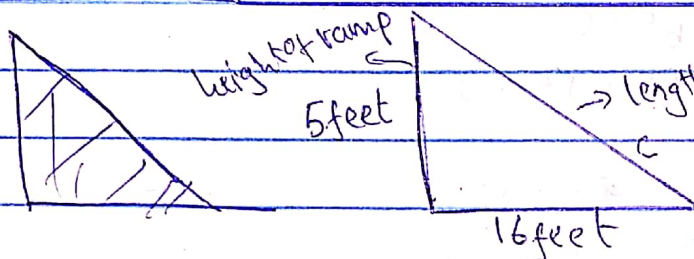
$$14^2 = 12^2 + b^2$$

$$\sqrt{b^2} = \sqrt{14^2 - 12^2}$$

$$b = \sqrt{52}$$

$$= 2\sqrt{13} \text{ feet}$$

4b.

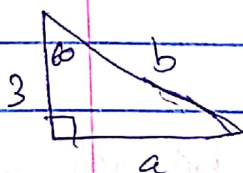


$$a^2 + b^2 = c^2$$

$$16^2 + 5^2 = c^2$$

$$c = \sqrt{281} \text{ feet}$$

5a.



$$\sin 30 = \frac{3}{b}$$

$$b = \frac{3}{\sin 30}$$

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

$$b = 6$$

$$a^2 + b^2 = c^2$$

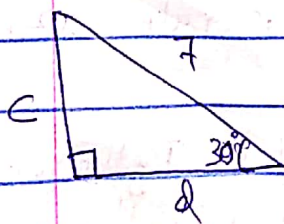
$$3^2 + a^2 = 6^2$$

$$a^2 = 6^2 - 3^2$$

$$a = \sqrt{27}$$

$$= 3\sqrt{3}$$

5b



$$\sin 30 = \frac{c}{7}$$

$$\frac{1}{2} = \frac{c}{7}$$

$$c = \frac{7}{2} \text{ or } 3.5$$

$$= 3.5 \text{ or } 3\frac{1}{2}$$

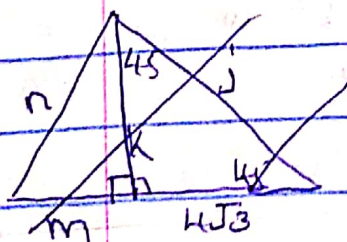
$$7^2 = d^2 + \left(\frac{7}{2}\right)^2$$

$$49 = d^2 + \left(\frac{7}{2}\right)^2$$

$$d = \sqrt{49 - \frac{49}{4}}$$

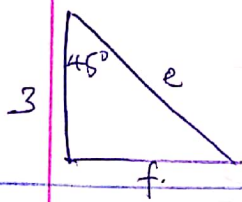
$$d = 7\sqrt{\frac{3}{4}}$$

5c



$$\cos 48 =$$

5c



$$\cos 45 = \frac{3}{e}$$

$$e = \frac{3}{\cos 45}$$

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

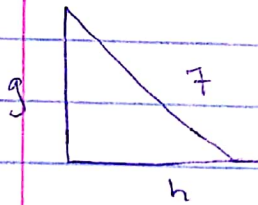
$$e = 3\sqrt{2} \text{ units}$$

$$\sin 45 = \frac{f}{e}$$

$$3\sqrt{2} \times \frac{1}{\sqrt{2}} = \frac{f}{3\sqrt{2}}$$

$$f = 3 \text{ units}$$

5d



$$\sin 45 = \frac{h}{7}$$

$$\frac{1}{\sqrt{2}} = \frac{h}{7}$$

$$h = \frac{7}{\sqrt{2}}$$

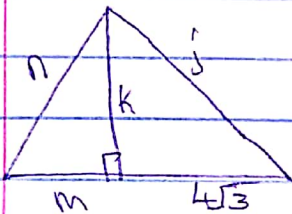
$$\sin 45 = \frac{g}{7}$$

$$g = 7 \times \sin 45$$

$$= 7 \times \frac{1}{\sqrt{2}}$$

$$g = \frac{7}{\sqrt{2}}$$

5e



$$\sin 45 = \frac{k}{4\sqrt{3}}$$

$$k = \frac{4\sqrt{3}}{\sqrt{2}} \times \frac{1}{\sqrt{2}}$$

$$k = 4\sqrt{6}$$

$$\sin 45 = \frac{k}{4\sqrt{6}}$$

$$k = \frac{1}{\sqrt{2}} \times 4\sqrt{6}$$

$$= \frac{4 \times \sqrt{3} \times \sqrt{2}}{\sqrt{2}}$$

$$k = 4\sqrt{3}$$

$$\sin 30 = \frac{4\sqrt{3}}{n}$$

$$n = \frac{4\sqrt{3}}{\frac{1}{2}} \times 2$$

$$n = 8\sqrt{3}$$

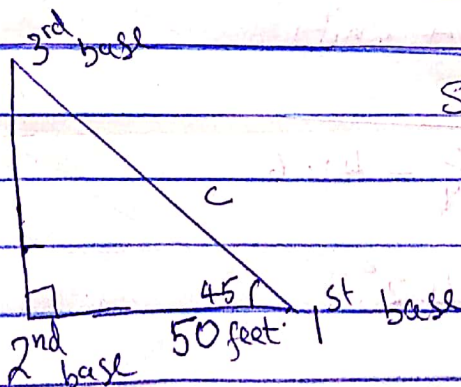
$$\sin 60 = \frac{m}{n}$$

$$\frac{\sqrt{3}}{2} = \frac{m}{8\sqrt{3}}$$

$$m = \frac{\sqrt{3}}{2} \times \frac{8}{\sqrt{3}} \times \sqrt{3} = 4 \times 3$$

$$m = 12$$

6



$$\sin 45 =$$

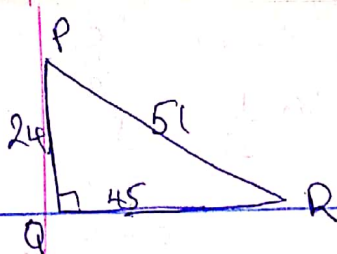
$$\cos 45 = \frac{50}{c}$$

$$\frac{1}{\sqrt{2}} = \frac{50}{c} \times \frac{c}{c}$$

$$\frac{c}{\sqrt{2}} = 50 \times \sqrt{2}$$

$$c = 50\sqrt{2}$$

7

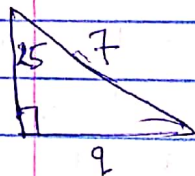


$$\sin P = \frac{45}{15} = \frac{15}{17}$$

$$\cos P = \frac{24}{25} = \frac{8}{17}$$

$$\tan P = \frac{24}{45} = \frac{8}{15}$$

8(a)



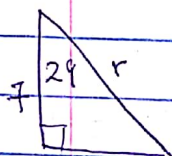
$$\sin 25^\circ = \frac{q}{7}$$

$$q = 7 \times \sin 25^\circ$$

$$= 2.9583$$

$$3.0 \text{ units}$$

8b.

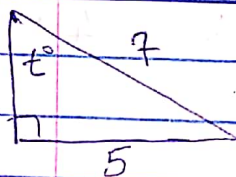


$$\cos 29^\circ = \frac{7}{r}$$

$$r = \frac{7}{\cos 29^\circ} = 8.0035$$

$$r = 8.0 \text{ units}$$

8c

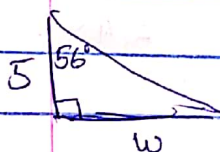


$$\sin t^\circ = \frac{5}{7}$$

$$t^\circ = 45.5847$$

$$= 46^\circ$$

8d

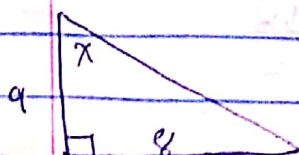


$$\tan 56^\circ = \frac{w}{5}$$

$$w = 5 \tan 56^\circ = 7.4128$$

$$w = 7.4 \text{ units}$$

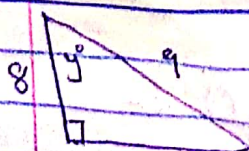
8e



$$\tan x = \frac{8}{9} = 41.6$$

$$x = 42^\circ$$

8f.

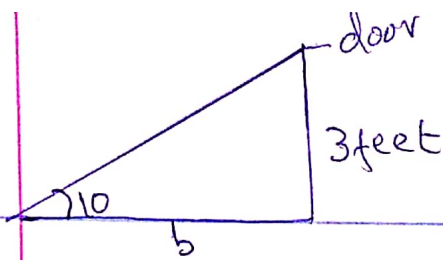


$$\cos y =$$

$$\cos y^\circ = \frac{8}{9} = 27.26$$

$$y = 27^\circ$$

9



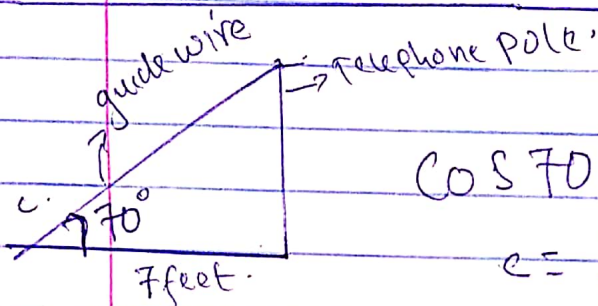
$$\tan 10^\circ = \frac{3}{b}$$

$$b = \frac{3}{\tan 10^\circ}$$

$$b = 17.0138 \text{ feet}$$

$$= 17 \text{ feet.}$$

10

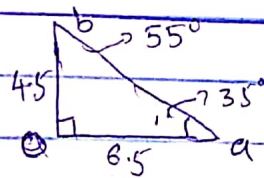
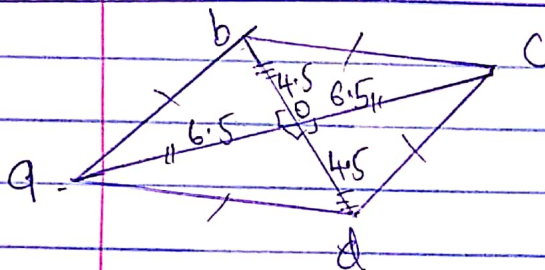


$$\cos 70^\circ = \frac{7}{c}$$

$$c = \frac{7}{\cos 70^\circ} = 20.4666 \text{ feet (4dp)}$$

$$= 20 \text{ feet (nearest foot)}$$

11



$$\tan a = \frac{4.5}{6.5}$$

$$\tan a = \frac{4.5}{6.5} = 34.64 = 35$$

$$\tan b = \frac{6.5}{4.5} = 55.30$$

$$= 55^\circ$$

The measures of the angles are:

$$\text{angle } a = 70^\circ$$

$$\text{angle } b = 55 \times 2 = 110^\circ$$

$$\text{angle } c = 70^\circ$$

$$\text{Angle } d = 110^\circ$$