

Math 10 Trig Exam Review Solutions



Knack Academics

A Great Study and Exam Prep Tool!

A Review Sheet of
Every Topic in Math
and Science*!

* (Asterisk)
Be Careful*
Not Exactly* :)

Nicholas Cragg
Math/Physics/Calculus Tutor
Bcom, Finance (UBC Sauder)

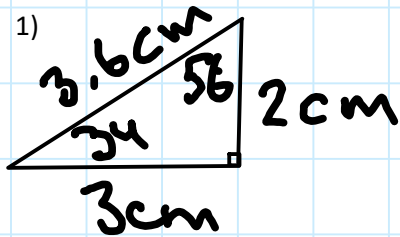
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$$a^2 + b^2 = c^2$$

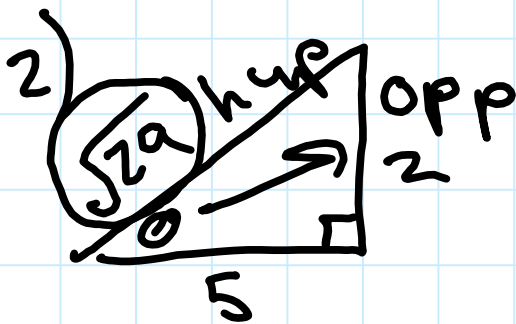
$$3^2 + 2^2 = 3.6^2$$

$$13 = 12.96 \checkmark$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

→ $\tan 34 = \frac{2}{3}$

$$0.67 = 0.6 \checkmark$$



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

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

$$\sqrt{29} = \sqrt{c^2}$$

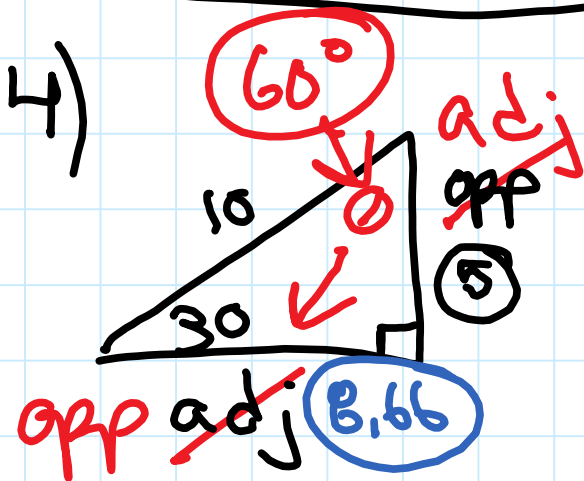
$$c = \sqrt{29}$$

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin \theta = \frac{2}{\sqrt{29}}$$

3) $\tan 25 = 0.466$

$10 \sin 30 = 5$



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

$$8.66^2 + 5^2 = 10^2$$

$$100 = 100 \checkmark$$

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$10 \times \sin 30 = \frac{\text{opp}}{10} \times 10$$

$$\cos 30 = \frac{\text{adj}}{10} \times 10$$

$\text{opp} = 5$

$\text{adj} = 8.66$

$$\tan \theta = \frac{\text{adj}}{\text{opp}}$$

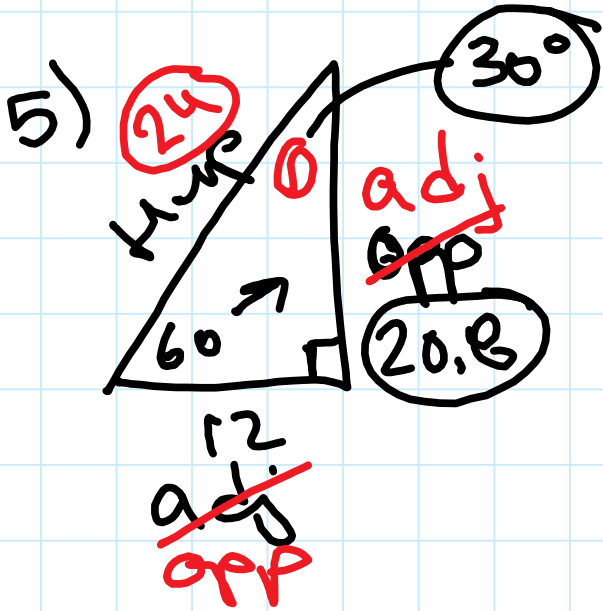
$$30 + 60 + 90 = 180^\circ$$

$$\tan \theta = \frac{8.66}{5}$$

$$\theta = \tan^{-1} \left(\frac{8.66}{5} \right)$$

$\theta = 59.99^\circ$

SOH CAH TOA



$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$12 \times \tan \theta = \frac{\text{opp}}{\cancel{12} \times 12}$$

$$\text{opp} = 20.8$$

$$\sin \theta = \frac{\text{opp}}{\text{hyp}}$$

$$\sin \theta = \frac{12}{24}$$

$$\theta = \sin^{-1} \left(\frac{12}{24} \right)$$

$$\theta = 30$$

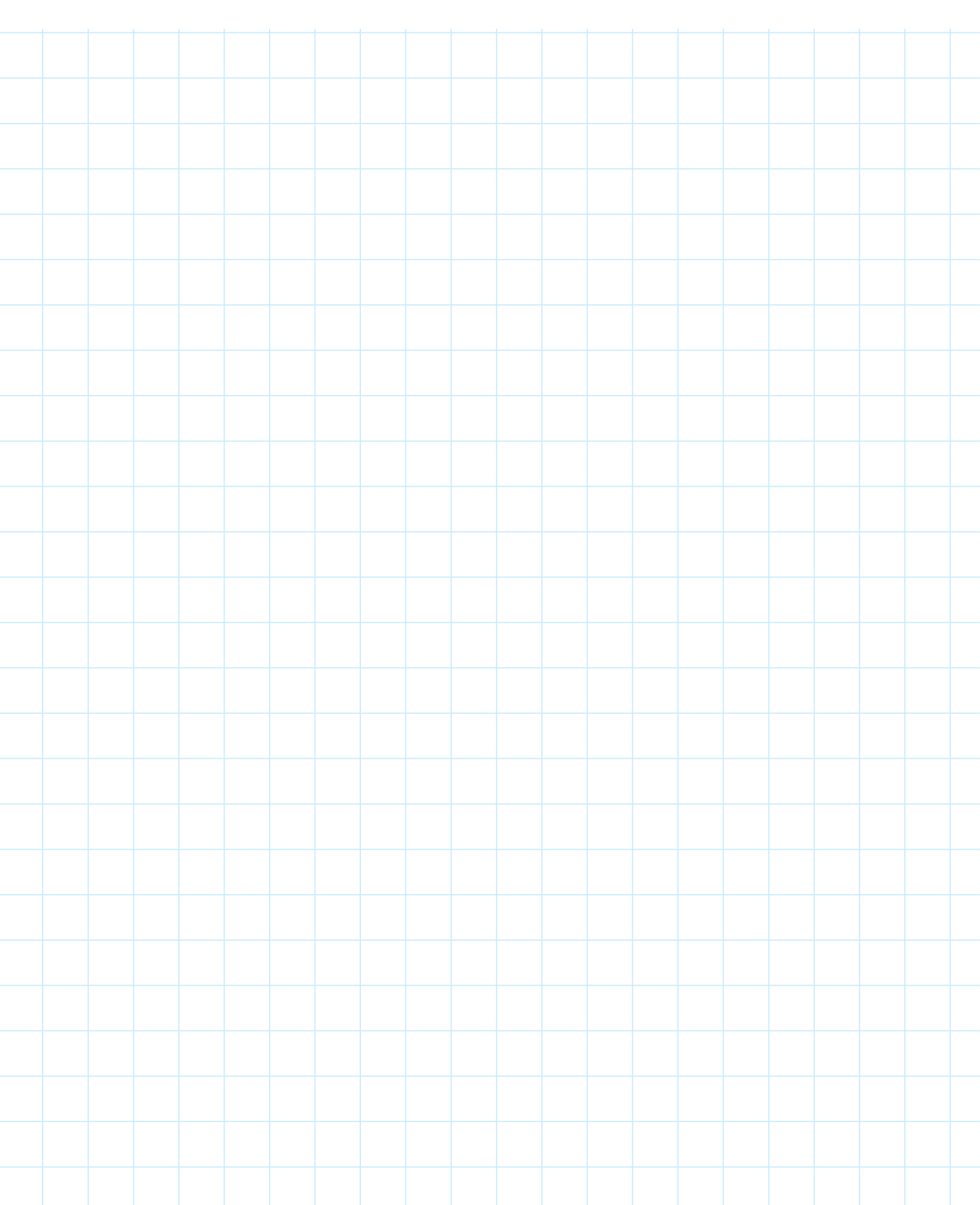
$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos 60 = \frac{12}{\text{hyp}}$$

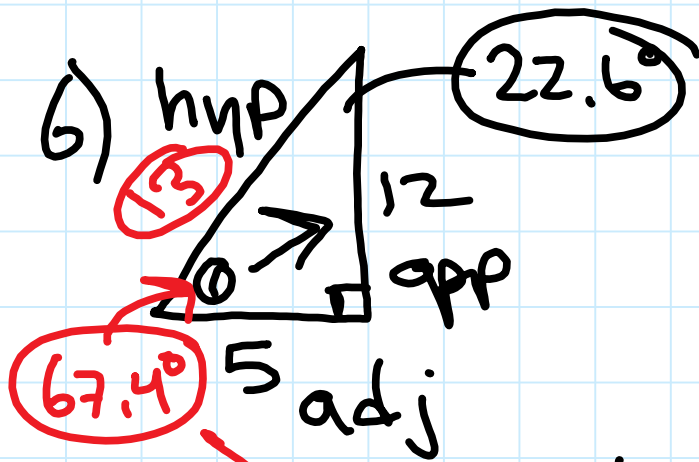
$$\text{hyp} = \frac{12}{\cos 60}$$

$$\text{hyp} = 24$$

$$\begin{array}{r} 3 = \frac{6}{2} \\ 2 = \frac{6}{3} \end{array}$$



SOH CAH TOA



$\sin \theta = \frac{\text{opp}}{\text{hyp}}$ $\tan \theta = \frac{\text{opp}}{\text{adj}}$
 $\sin \theta = \frac{12}{13}$ $\tan \theta = \frac{12}{5}$

$\theta = \tan^{-1}\left(\frac{12}{5}\right)$

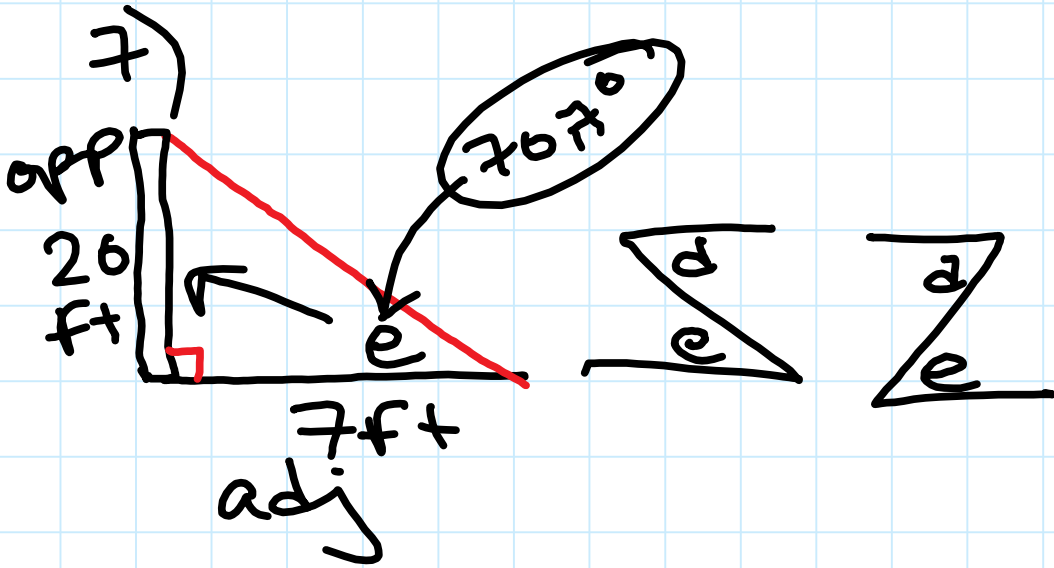
$\theta = 67.4^\circ$

$90 - 67.4 = 22.6^\circ$

$a^2 + b^2 = c^2$
 $5^2 + 12^2 = c^2$

$\sqrt{169} = \sqrt{c^2}$
 $c = 13$

SOH CAH TOA

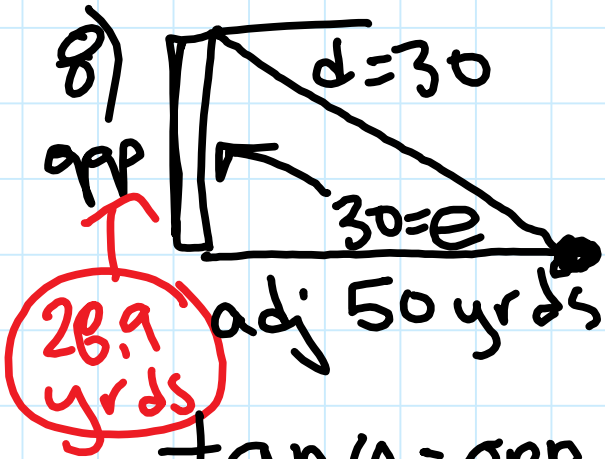
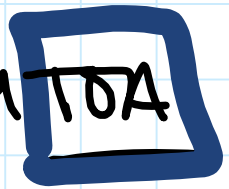


$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$\tan e = \frac{26}{7}$$

$$e = \tan^{-1}\left(\frac{26}{7}\right)$$

$$e = 70.7^\circ$$

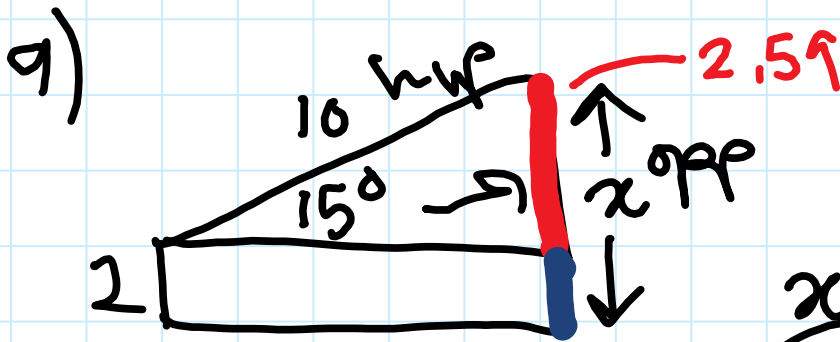


$$\frac{d}{e} = \frac{d}{e}$$

$$\tan \theta = \frac{\text{opp}}{\text{adj}}$$

$$50 \times \tan 30 = \frac{\text{opp}}{50} \times 50$$

$$\text{opp} = 28.9 \text{ yds}$$



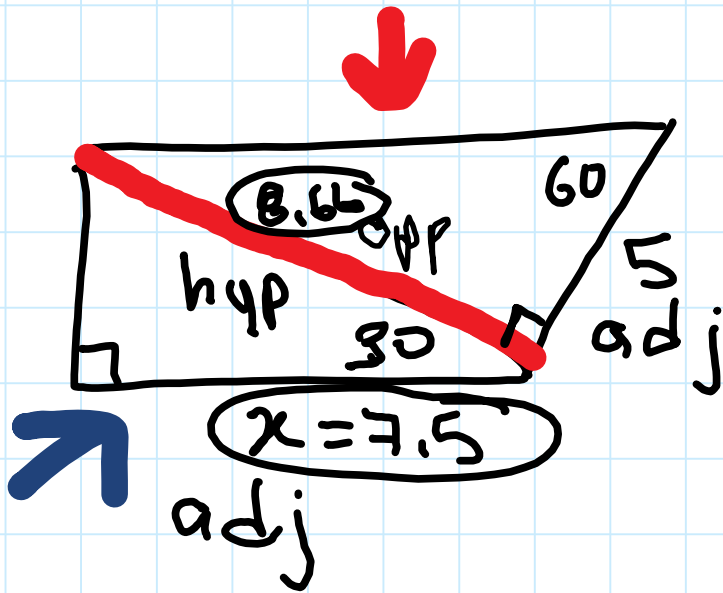
$$x = 2.59 + 2$$

$$x = 4.59$$

$$10 \times \sin 15 = \frac{\text{opp}}{10} \times 10$$

$$\text{opp} = 2.59$$

10)



$$5 \times \tan 60 = \frac{\text{opp} \times 5}{5} \quad \text{8.66} \cos 30 = \frac{\text{adj}}{\text{8.66}}$$

~~8.66~~

$$\text{opp} = 8.66$$

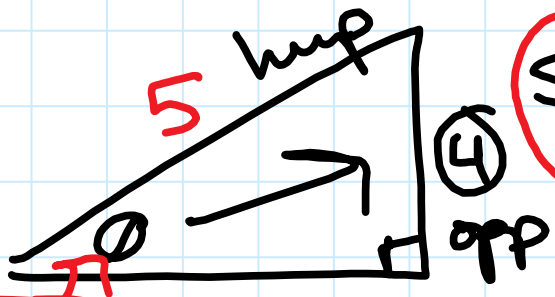
$$\text{adj} = 7.5$$

$x = 7.5$

SOH CAH TOA

1) $\cos \theta = \frac{3}{5}$ $\sin \theta = \frac{\text{opp}}{\text{hyp}}$

adj *hyp*



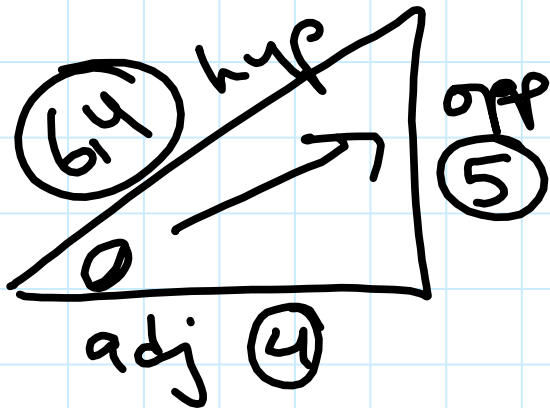
$\sin \theta = \frac{4}{5}$

53.1°

$\theta = \sin^{-1}\left(\frac{4}{5}\right)$
 $\theta = 53.1^\circ$

$a^2 + b^2 = c^2$
 $3^2 + b^2 = 5^2$
 $9 + b^2 = 25$
 -9
 $\sqrt{b^2} = \sqrt{16}$
 $b = 4$

$$1/b) \tan \theta = 1.25$$



$$\cos \theta = \frac{\text{adj}}{\text{hyp}}$$

$$\cos \theta = \frac{4}{\sqrt{41}}$$

$$\tan \theta = 1.25$$

$$\theta = \tan^{-1}(1.25)$$

$$\theta = 51.3^\circ$$

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

$$4^2 + 5^2 = c^2$$

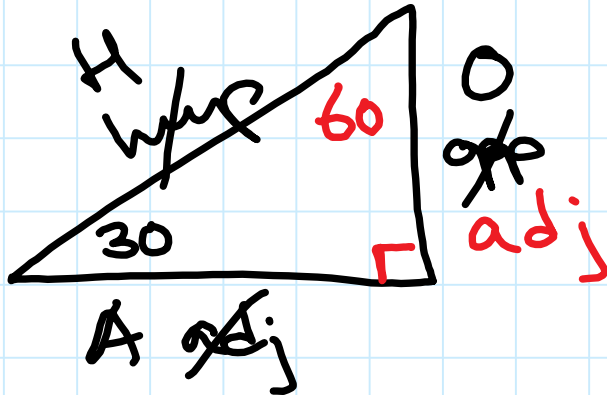
$$\sqrt{41} = \sqrt{c^2}$$

$$c = \sqrt{41}$$

$$c = 6.4$$

$$\tan \theta = \frac{5 \leftarrow \text{opp}}{4 \leftarrow \text{adj}} \quad 1.25 = 1 \frac{1}{4} = \frac{5}{4}$$

12) $\sin 30^\circ = \cos x^\circ$ ←



$\sin 30^\circ = \frac{\text{opp}}{\text{hyp}}$
 $\sin 30 = \frac{0}{H}$ ←

$\cos x$

$\cos 60 = \frac{0}{H}$

$x = 60^\circ$

$\cos 60 = \frac{\text{adj}}{\text{hyp}}$
 $\cos 60 = \frac{0}{H}$

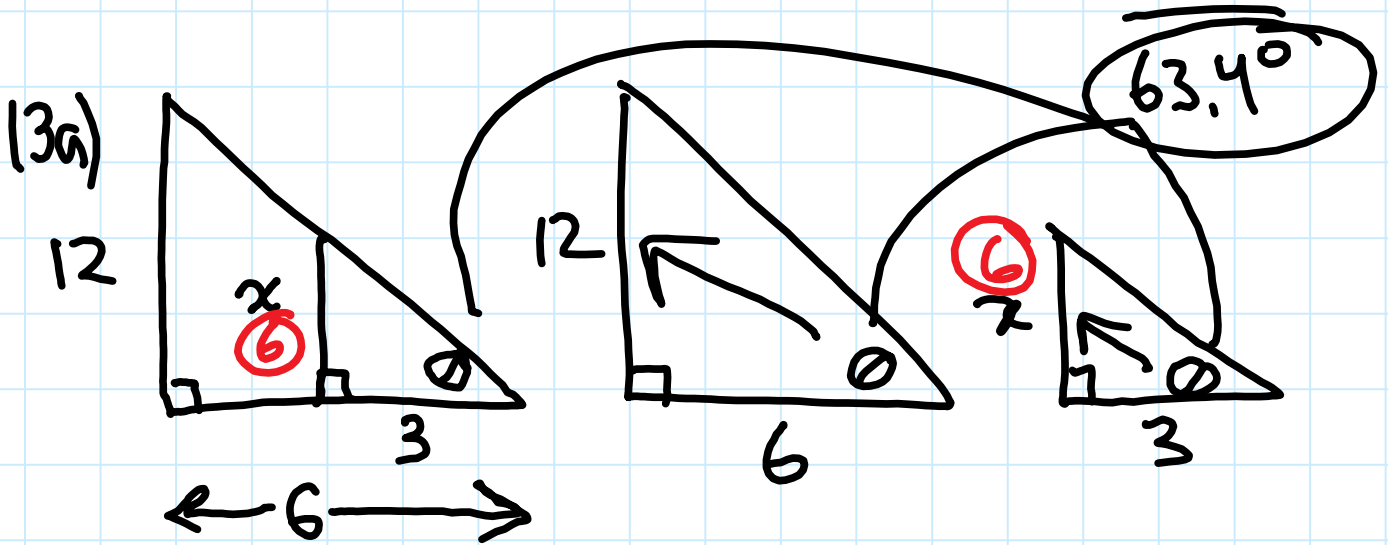
b) $\cos 0^\circ = \sin x^\circ$

$\cos 0 = \sin(90 - 0)$

$90 - 30 = 60$

$90 - 0 = 90 \therefore x = 90^\circ$

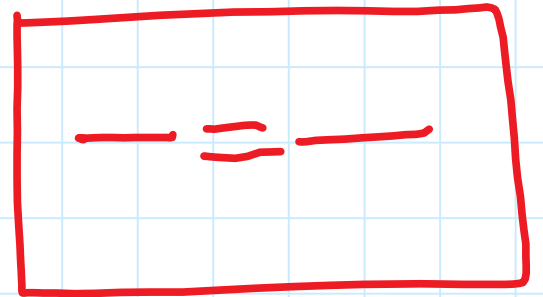
$\cos 0 = 1 \quad \sin 90 = 1$



~~$3 \times \frac{x}{3} = \frac{12 \times 3}{6}$~~

$x = 6$

~~$\frac{x}{12} = \frac{3}{6}$~~



$\tan \theta = \frac{12}{6}$

$\tan \theta = 2$

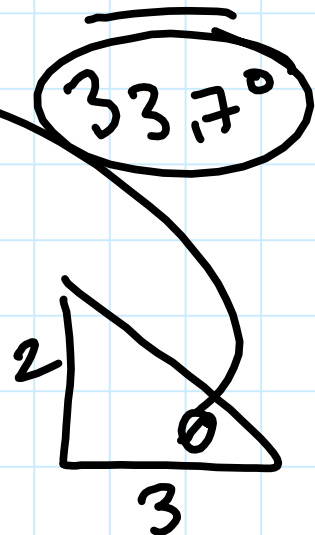
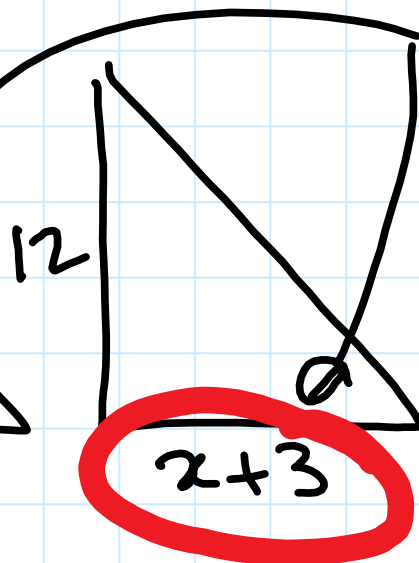
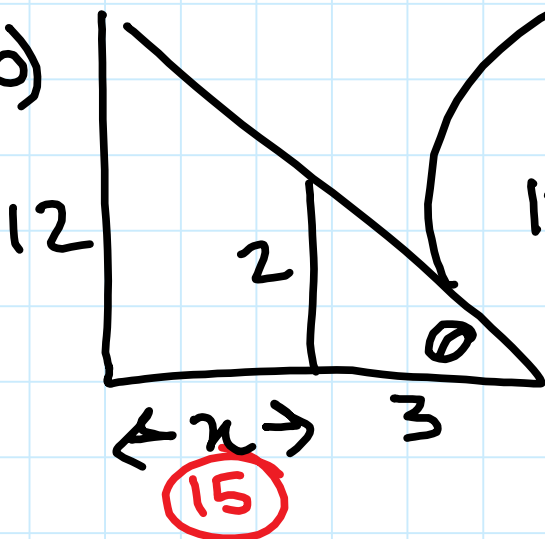
$\tan \theta = \frac{6}{3}$

$\tan \theta = 2$

$\theta = \tan^{-1}(2)$

$\theta = 63.4^\circ$

13b)



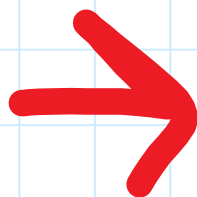
$$\frac{x+3}{3} = \frac{12}{2}$$

~~$\frac{x+3}{3} = 6 \times 3$~~

$$x+3 = 18$$

$$\begin{array}{r} -3 \\ -3 \end{array}$$

$$x = 15$$



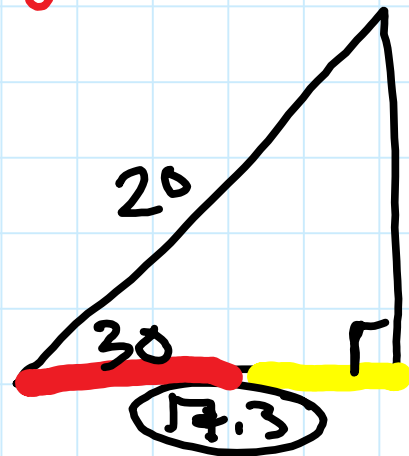
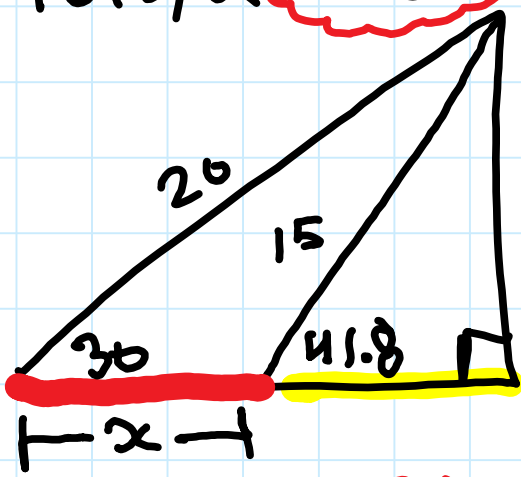
$$\tan \theta = \frac{2}{3}$$

$$\theta = \tan^{-1}\left(\frac{2}{3}\right)$$

$$\theta = 33.7^\circ$$

SOH CAH TOA

13.5) a \Rightarrow 13c $\ddot{\smile}$



$$20 \cos 30 = \frac{\text{adj}}{20}$$

$$\text{adj} = 17.3$$

$$15 \cos 41.8 = \frac{\text{adj}}{15}$$

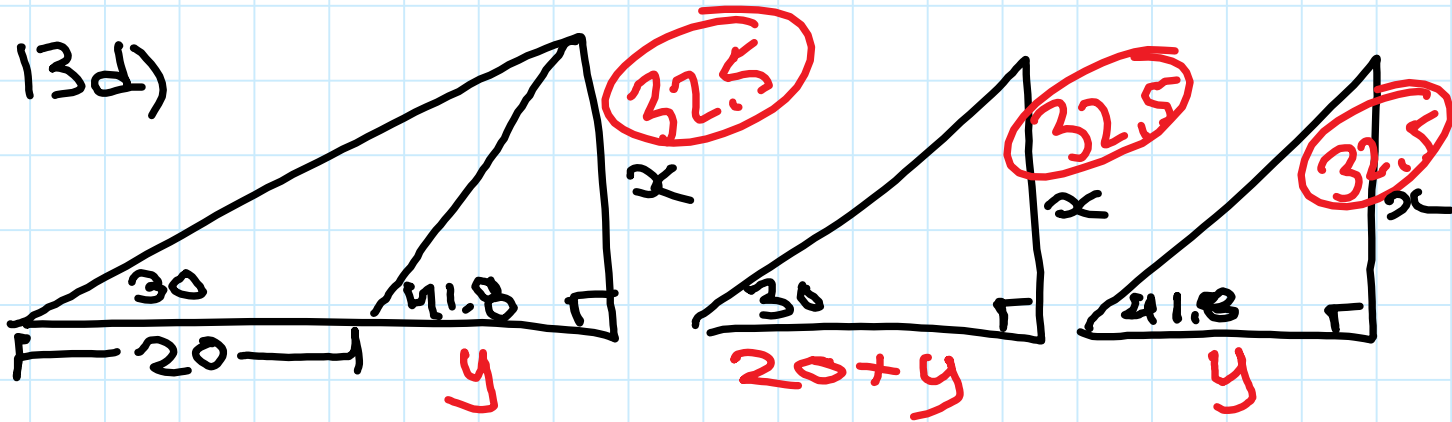
$$\text{adj} = 11.1$$

$$x = 17.3 - 11.1$$

$$x = 6.2$$

~~13.5a~~ 13c.

13d)



$$\tan 30 = \frac{x}{20+y}$$

$$0.577 = \frac{x}{20+y}$$

$$\tan 41.8 = \frac{x}{y}$$

$$0.894 = \frac{x}{y}$$

$$0.577(20+y) = x$$

$$0.894y = x$$

$$11.54 + 0.577y = x$$

$$11.54 + 0.577y = 0.894y - 0.577y$$

$$\frac{11.54}{0.317} = 0.317y$$

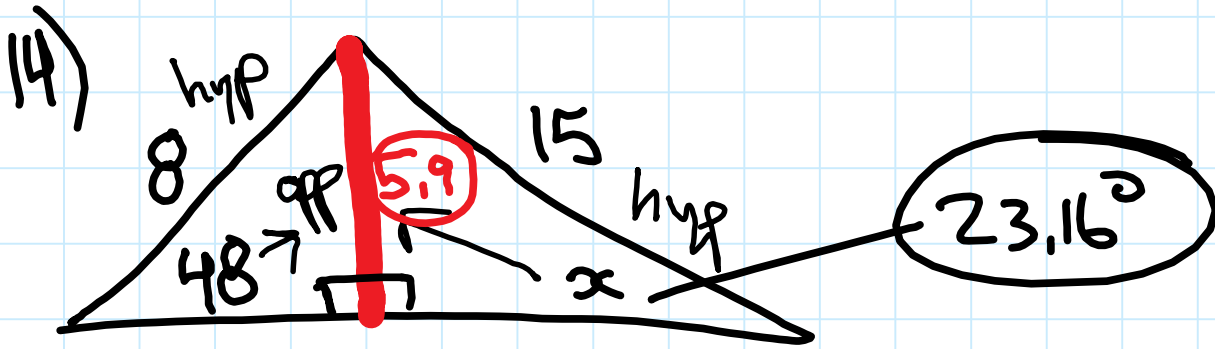
$$y = 36.4$$

$$0.894y = x$$

$$0.894(36.4) = x$$

$$x = 32.5$$

SOH CAH TOA



$\sin 48 = \frac{\text{opp}}{\text{hyp}}$

$\text{opp} = 5.9$

$\text{opp} = 5.945$

$\sin x = \frac{5.9}{15}$

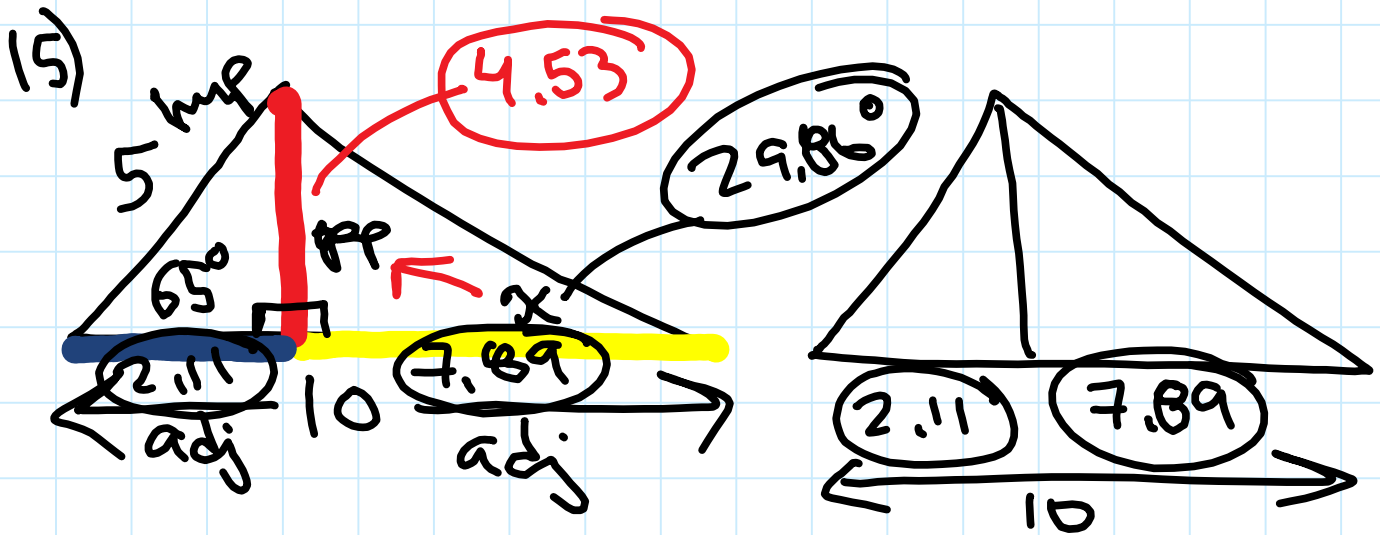
$x = \sin^{-1}\left(\frac{5.9}{15}\right)$

$x = 23.16^\circ$

$x = \sin^{-1}\left(\frac{5.945}{15}\right)$

$x = 23.35^\circ$

$x = 23.4^\circ$



$$5 \sin 65 = \frac{\text{opp}}{5}$$

$$\text{opp} = 4.53$$

$$\tan x = \frac{4.53}{7.89}$$

$$\tan x = \frac{\text{adj}}{7.89}$$

$$x = \tan^{-1} \left(\frac{4.53}{7.89} \right)$$

$$x = 29.86^\circ$$

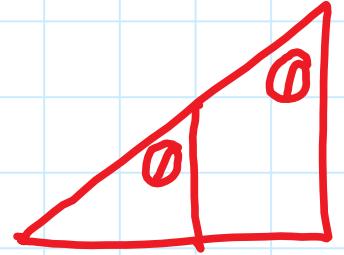
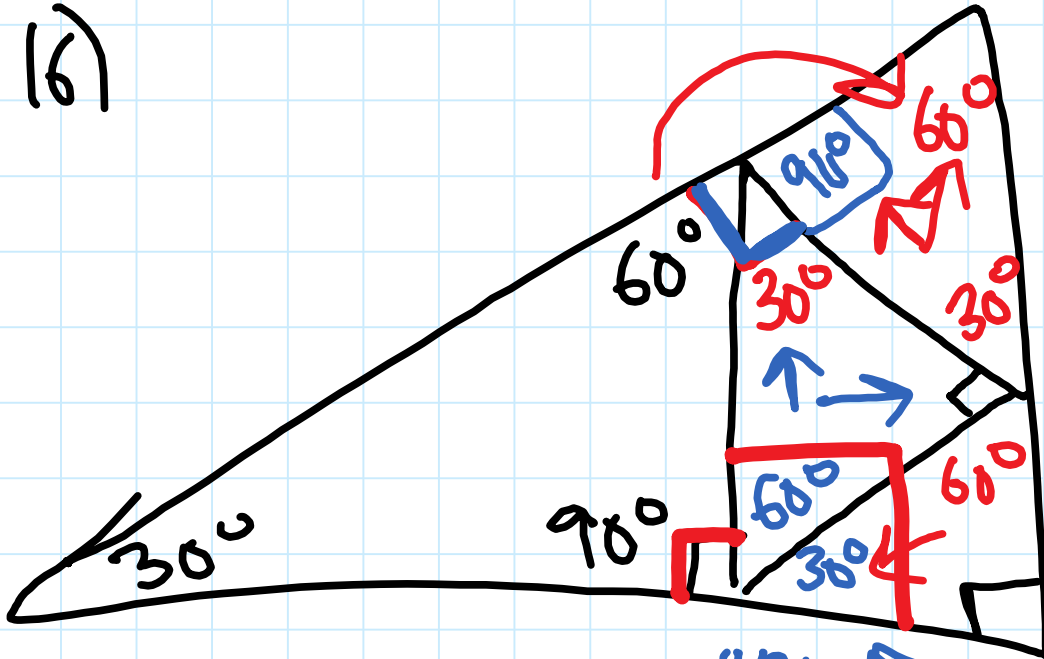
$$5 \cos 65 = \frac{\text{adj}}{5}$$

$$\text{adj} = 2.11$$

$$10 - 2.11 = 7.89$$

$$x = 29.86^\circ$$

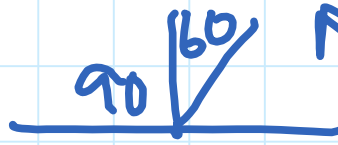
16)



$$30 + 90 = 120$$

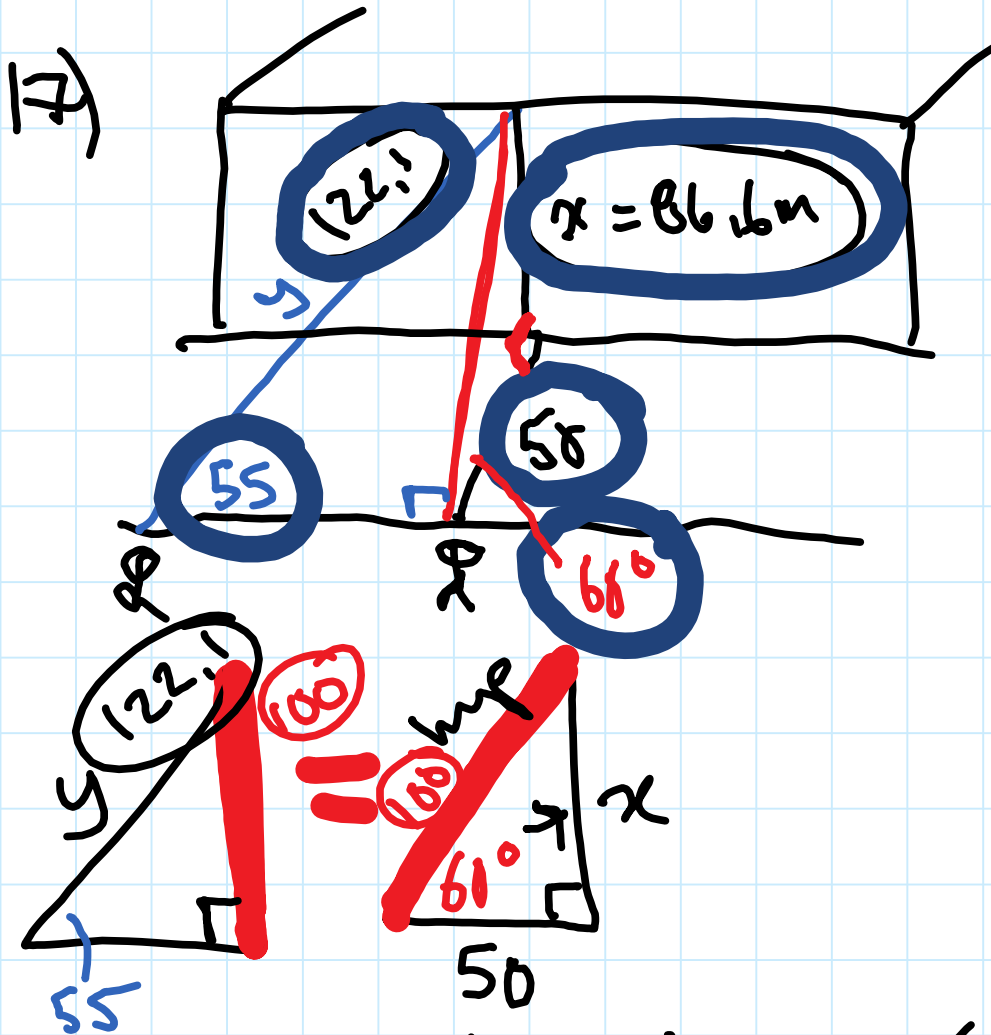
$$180 - 120 = 60^\circ$$

$$90 - 30 = 60^\circ$$



$$90 + 60 = 150$$

$$180 - 150 = 30$$



$$50 \tan 60 = \frac{x \cancel{50}}{\cancel{50}}$$

$$x = 86.6m$$

$$\sin 55 = \frac{100}{\text{hyp}}$$

$$\text{hyp} = \frac{100}{\sin 55}$$

$$y = 122.1m$$

$$\cos 60 = \frac{50}{\text{hyp}}$$

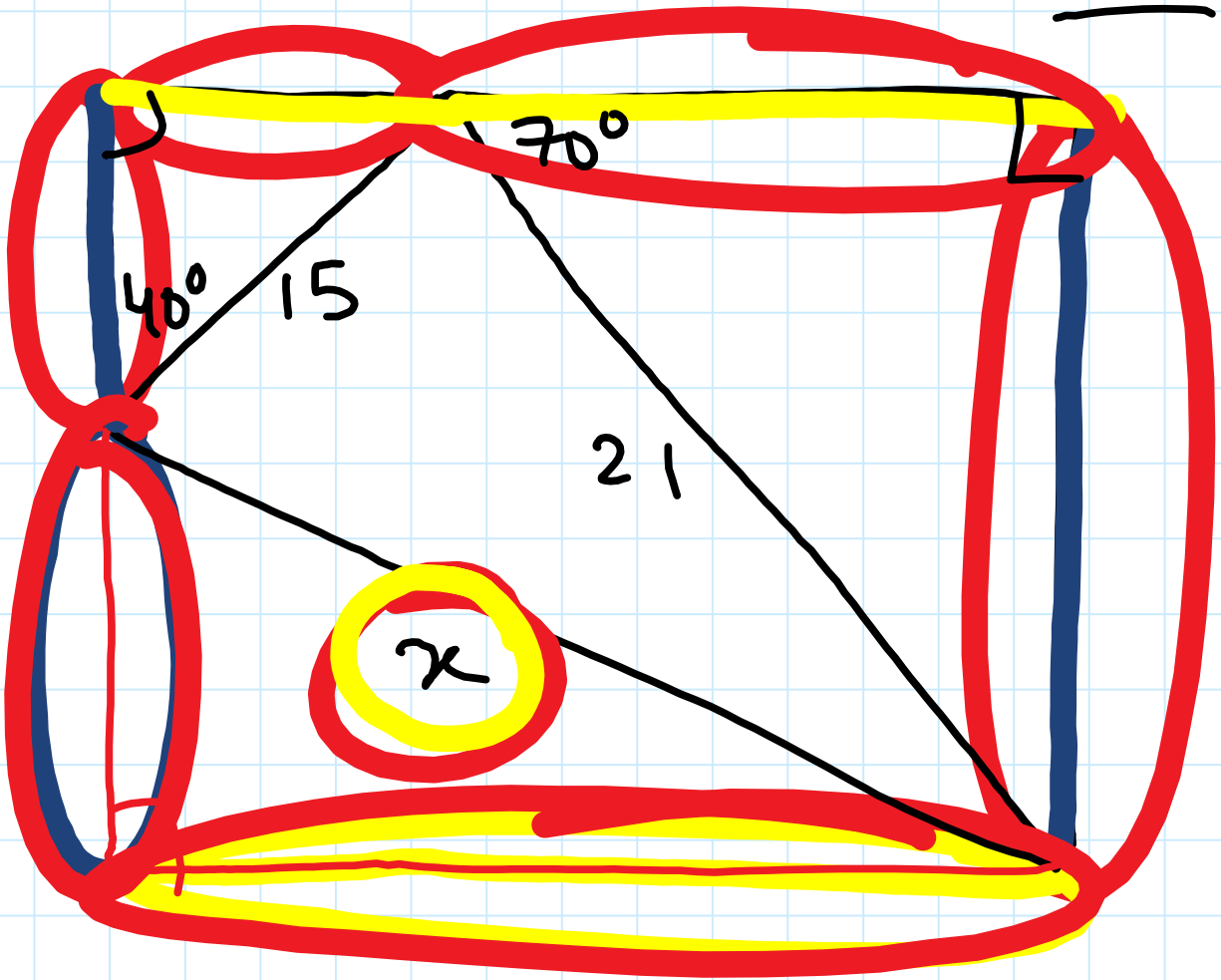
$$\text{hyp} = \frac{50}{\cos 60}$$

$$\text{hyp} = 100$$

$$3 = \frac{6}{2}$$

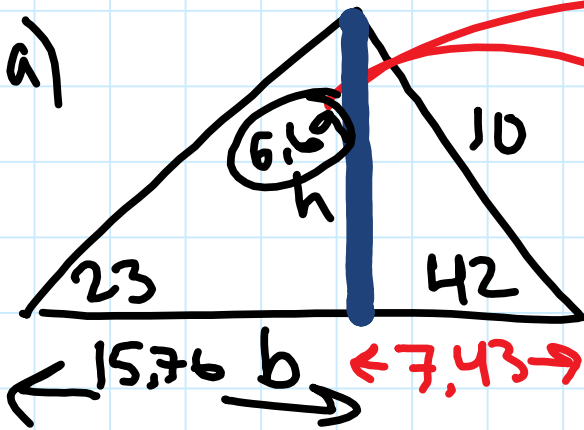
$$2 = \frac{6}{3}$$

18)



SOH CAH TOA

19a)



$$A = \frac{bh}{2}$$

$$A = \frac{23 \cdot 9.669}{2}$$

$$A = 77.6 \text{ cm}^2$$

~~$$\cos 23 = \frac{\text{adj}}{\text{hyp}}$$~~

$$\tan 23 = \frac{6.69}{\text{adj}}$$

$$\text{adj} = \frac{6.69}{\tan 23}$$

$$\text{adj} = 15.76$$

~~$$10 \sin 42 = \frac{h}{10}$$~~

$$h = 6.69$$

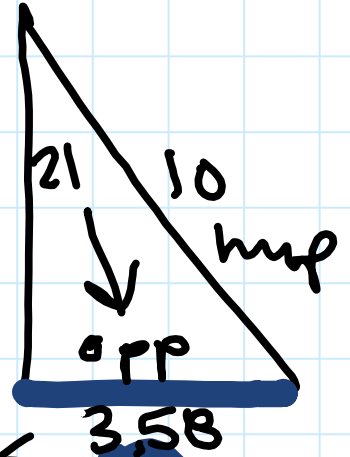
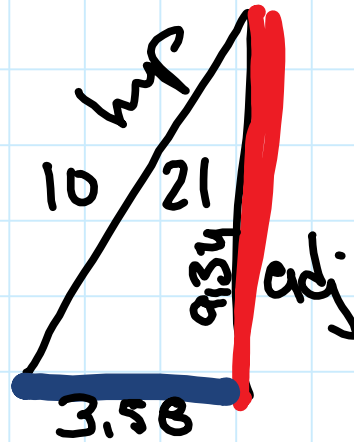
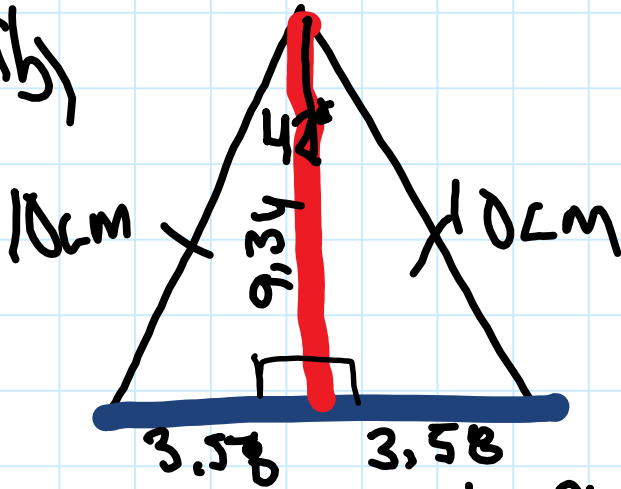
~~$$10 \cos 42 = \frac{\text{adj}}{10}$$~~

$$\text{adj} = 7.43$$

$$b = 15.76 + 7.43$$

$$b = 23.19$$

19b)



$$A = \frac{bh}{2}$$

$$A = \frac{7.17 \cdot 9.34}{2}$$

$$A = 33.47 \text{ cm}^2$$

$$10 \cos 21 = \frac{\text{adj}}{10}$$

$$\text{adj} = 9.34 \text{ cm}$$

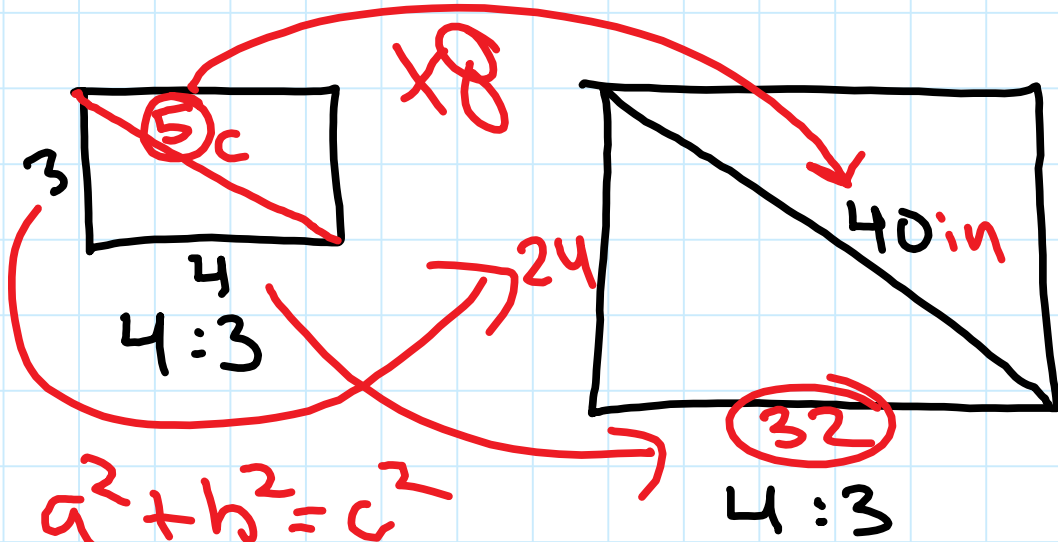
$$10 \sin 21 = \frac{\text{opp}}{10}$$

$$\text{opp} = 3.58 \text{ cm}$$

$$b = 3.58 + 3.58$$

$$b = 7.17 \text{ cm}$$

20)



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

$$3^2 + 4^2 = c^2$$

$$\sqrt{25} = \sqrt{c^2}$$

$$c = 5$$

$$\frac{40}{5} = 8 \quad 4 \times 8 = 32$$

$$3 \times 8 = 24$$

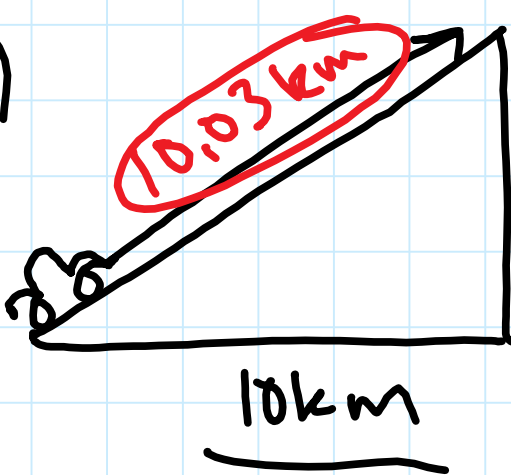
$$A = lw$$

$$A = 24 \times 32$$

$$A = 768 \text{ in}^2$$

SOH CAH TOA

21)



0.8 km
 800 m

$$S = \frac{50\text{ km}}{\text{hr}}$$

$$800\text{ m} \times \frac{1\text{ km}}{1000\text{ m}} = 0.8\text{ km}$$

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

$$10^2 + 0.8^2 = c^2$$

$$\sqrt{100.64} = c$$

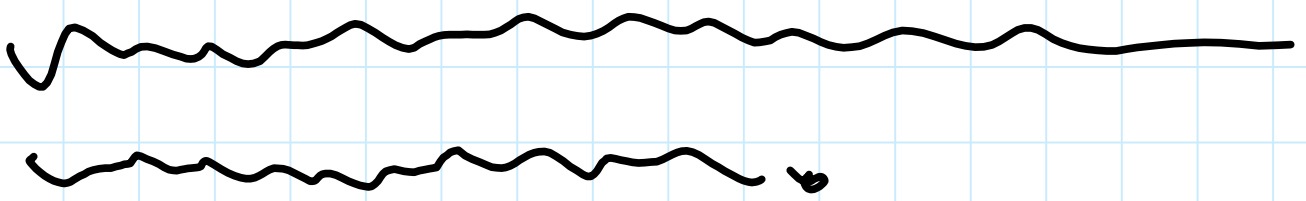
$$c = 10.03$$

$$S = \frac{d}{t}$$

$$50 = \frac{10.03}{t}$$

$$t = \frac{10.03}{50}$$

$$t = 0.2\text{ hrs}$$



22) $2y - 3x = 0$

$$2y - 3x = 0$$

$$+3x +3x$$

$$\frac{2y}{2} = \frac{3x}{2}$$

$$y = \frac{3}{2}x + 0$$

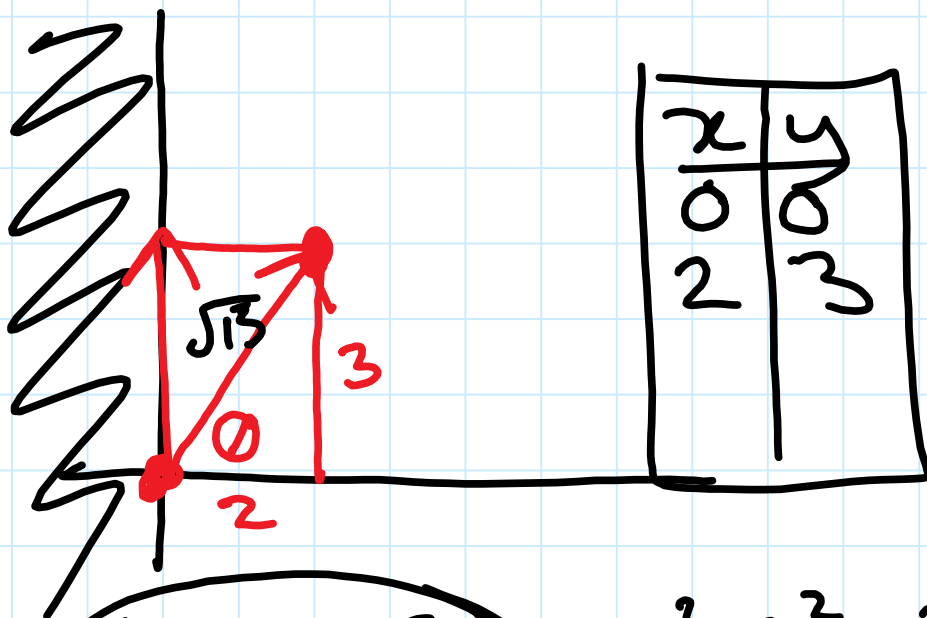
$y = mx + b$

$\sin \theta + \tan \theta$

$$2 \times \frac{3}{\sqrt{13}} + \frac{3}{2} \times \frac{\sqrt{13}}{\sqrt{13}}$$

$$\frac{6}{2\sqrt{13}} + \frac{3\sqrt{13}}{2\sqrt{13}}$$

$$\frac{6 + 3\sqrt{13}}{2\sqrt{13}}$$



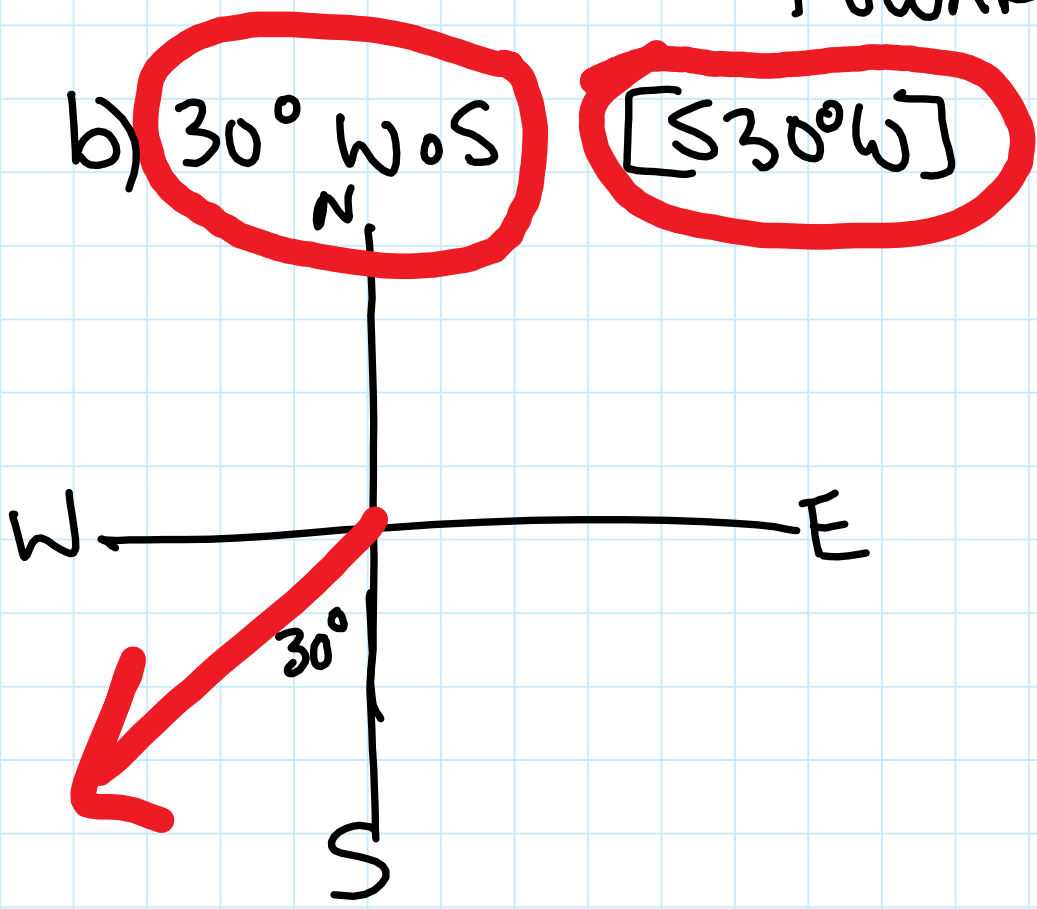
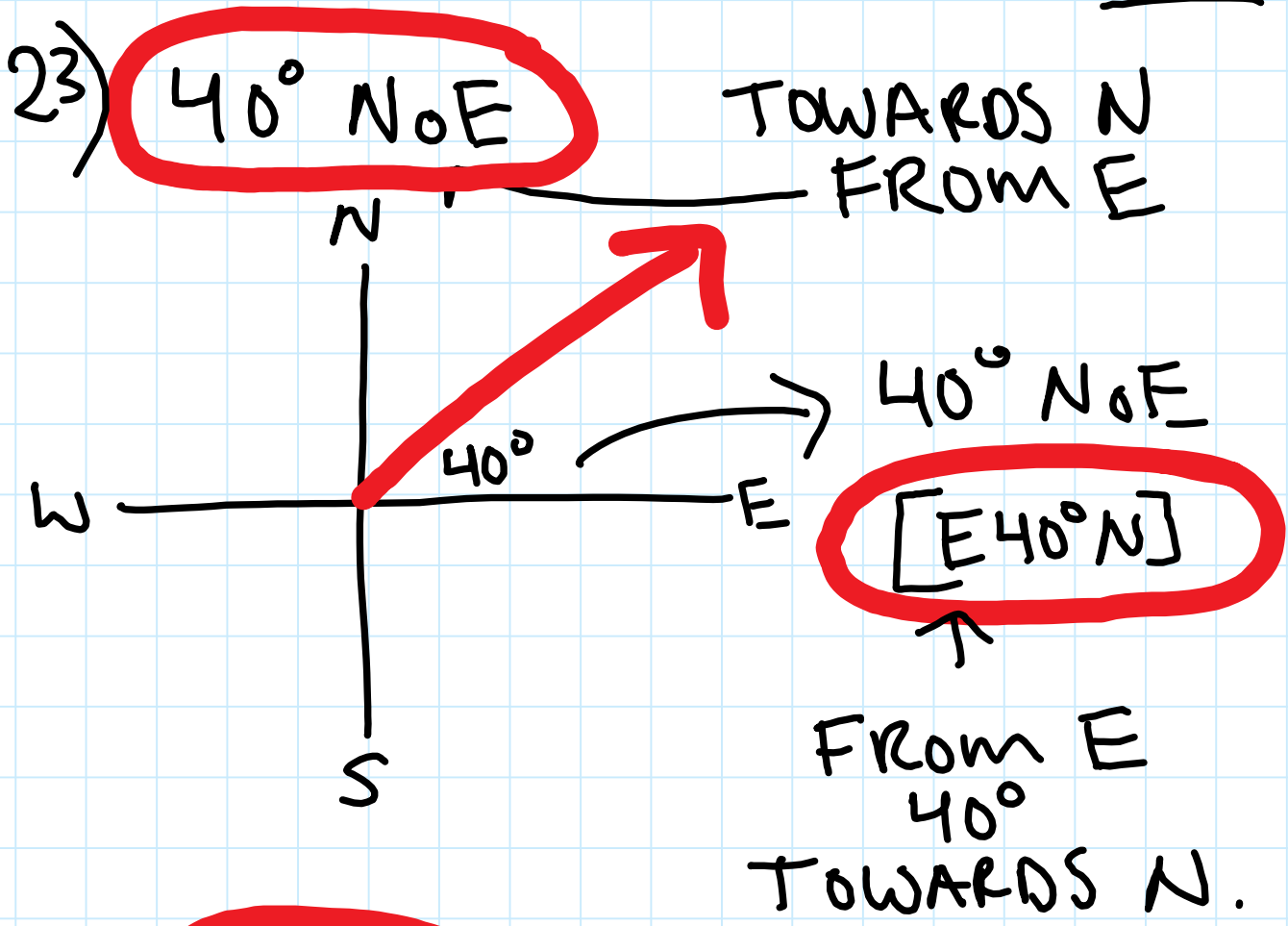
$$\tan \theta = \frac{3}{2}$$

$$\sin \theta = \frac{3}{\sqrt{13}}$$

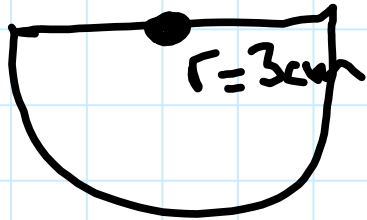
$$2^2 + 3^2 = c^2$$

$$\sqrt{13} = \sqrt{c^2}$$

$$c = \sqrt{13}$$



24a)



$$A = \pi r^2$$

$$A = \pi (3)^2$$

$$A = 9\pi \text{ cm}^2$$

$$A = 28.27 \text{ cm}^2$$

$$A_{1/2} = \frac{28.27}{2}$$

$$A_{1/2} = 14.14 \text{ cm}^2$$

$$P = D + C$$

$$C = 2\pi r$$

$$C = 2\pi(3)$$

$$C = 6\pi \text{ cm}$$

$$C = 18.85 \text{ cm}$$

$$D = 2r$$

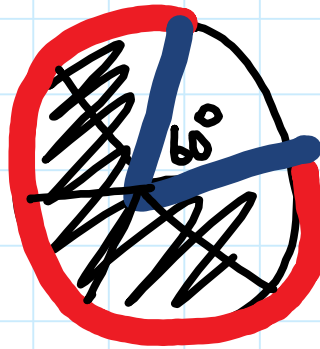
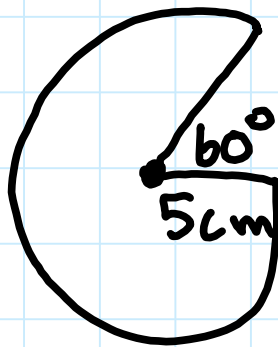
$$D = 2(3)$$

$$D = 6$$

$$P = 6 + \frac{18.85}{2}$$

$$P = 15.4 \text{ cm}$$

24b)



$$\frac{360^\circ}{60^\circ} = 6$$

$$A = \pi r^2$$

$$A = \pi (5)^2$$

$$A = 78.5 \text{ cm}^2$$

$$\times \frac{5}{6}$$

$$= 65.4 \text{ cm}^2$$

$$C = 2\pi r$$

$$C = 2\pi (5)$$

$$C = 31.4 \text{ cm}$$

$$\times \frac{5}{6}$$

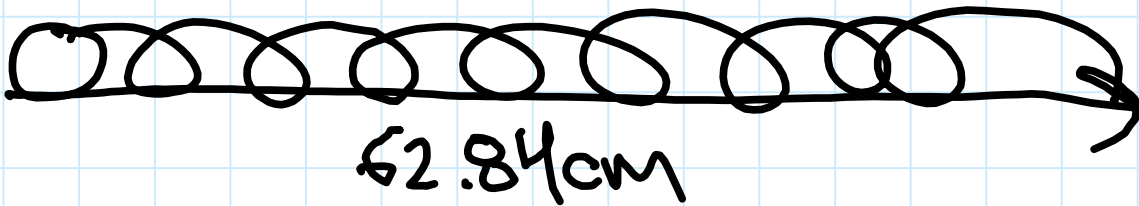
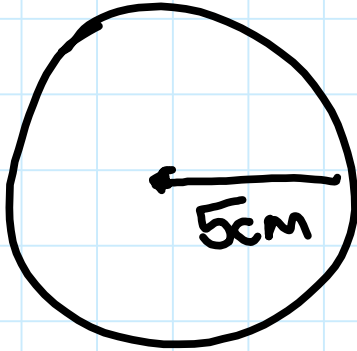
$$= 26.2 \text{ cm}$$

$$P = C \frac{s}{6} + 2r$$

$$P = 26.2 + 2(5)$$

$$P = 36.2 \text{ cm}$$

25)

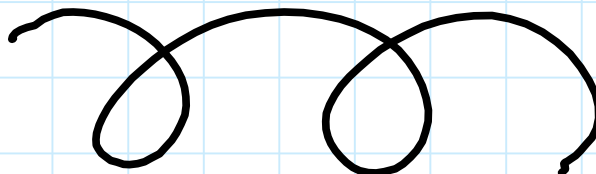


?° Turns.

$$C = 2\pi r$$

$$C = 2\pi(5)$$

$$C = 31.42 \text{ cm}$$



$$\frac{62.84}{31.42} = 2$$

$$2 \text{ Turns} = 720^\circ$$