

Assign / Quiz #1

Solutions.

1. a) $d = vt$

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

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

c) $a = bc + x^2$
 $a - bc = x^2$
 $\sqrt{a - bc} = x$

b) $\sin \theta = o/h$

$$(h) \sin \theta = \frac{o}{h} (h)$$

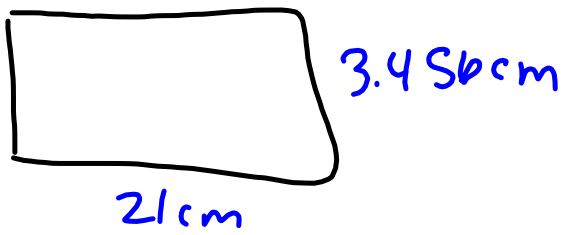
$$(h) \sin \theta = o$$
$$h = \frac{o}{\sin \theta}$$

d) $h^2 = a^2 + b^2$
 $h^2 - b^2 = a^2$
 $\sqrt{h^2 - b^2} = a$

2. a) 12 m/s \rightarrow Speed
 b) 13 m/s^2 \rightarrow acceleration
 c) 120 cm \rightarrow distance
 d) 4.0 m/s/s \rightarrow acceleration
 e) 56 km/h East \rightarrow Velocity

3. a) $120 \text{ m} \rightarrow 2$
 b) $1.20 \times 10^6 \text{ m} \rightarrow 3$
 c) $404 \text{ cm} \rightarrow 3$
 d) $0.0920 \text{ mm} \rightarrow 3$

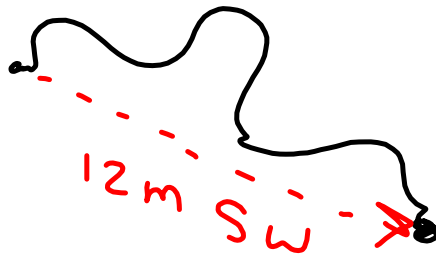
4.



$$\begin{aligned} A &= L \times w \\ &= 21 \text{ cm} \times 3.456 \text{ cm} \\ &= 72.576 \text{ cm}^2 \end{aligned}$$

$$\text{Area} = 73 \text{ cm}^2$$

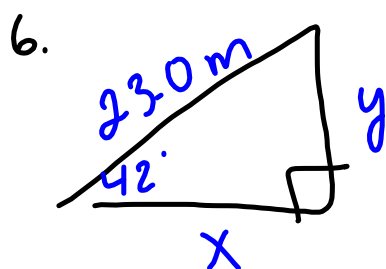
- 4. Scalar - magnitude only
- 5. Vector - magnitude and direction



distance - Actually what you do

displacement.

Straight line distance from start to end with direction.



$$\cos 42 = \frac{x}{23.0}$$

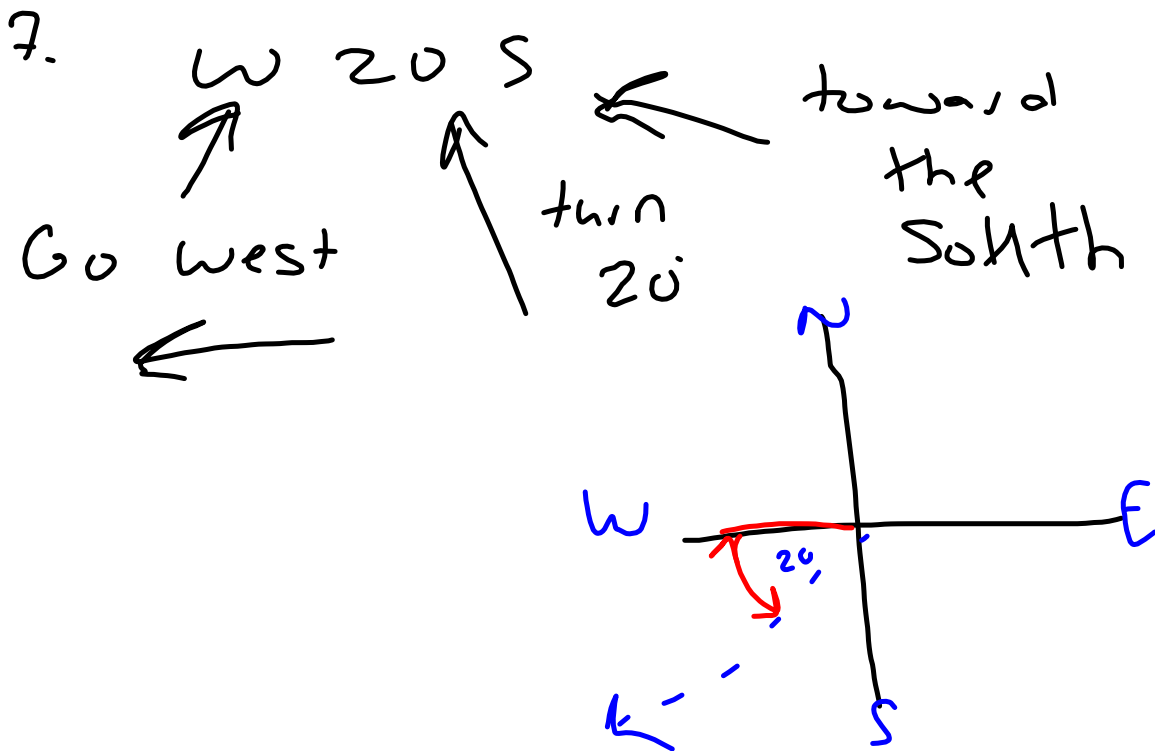
$$23.0 (\cos 42) = x$$

$$17.1\text{ m} = x$$

$$\sin 42 = \frac{y}{23.0}$$

$$23.0 \sin 42 = y$$

$$15.4\text{ m} = y$$



$$8. \quad 15 = 2t + t^2$$

$$0 = t^2 + 2t - 15$$

Use the quadratic formula

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

$$a = 1$$

$$b = 2$$

$$c = -15$$

$$t = \frac{-2 \pm \sqrt{2^2 - 4(1)(-15)}}{2(1)}$$

$$t = \frac{-2 \pm \sqrt{4 - (-60)}}{2}$$

$$t = \frac{2 \pm \sqrt{64}}{2}$$

$$t = \frac{2 \pm 8}{2}$$

$$t_1 = \frac{2-8}{2} = \frac{-6}{2} = -3$$

$$t_2 = \frac{2+8}{2} = \frac{10}{2} = 5$$

$$\begin{aligned} 9. \quad v_1 &= 14.0 \text{ m/s} \\ v_2 &= 0.0 \text{ m/s (stopped)} \\ t &= 5.0 \text{ sec} \end{aligned}$$

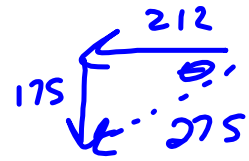
$$\begin{aligned} v &= \frac{v_1 + v_2}{2} \\ &= \frac{14 + 0}{2} \\ v &= 7.0 \text{ m/s} \end{aligned}$$

$$\begin{aligned} d &= v t \\ &= 7.0 \text{ m/s (5.0 sec)} \\ &= 35 \text{ m} \end{aligned}$$

distance a) $212\text{ m} + 175\text{ m} = 387\text{ m}$

displacement b) 275 m w 40 s

velocity c) $v = \frac{d}{t} = \frac{275\text{ m w } 40\text{ s}}{46.0\text{ sec}} = 5.98\text{ m/s w } 40\text{ s}$



Speed d) $v = \frac{d}{t} = \frac{387\text{ m}}{46.0\text{ sec}} = 8.41\text{ m/s}$



How long does it take Keifer to get to Blackville?
 $t = \frac{d}{v} = \frac{35.4 \text{ km}}{101 \text{ km/h}} = 0.350 \text{ hours}$

How far has Hayby gone in this time?

$$d = vt$$

$$= 80.0 \text{ km/h} \times 0.350 \text{ h} = 28.0 \text{ km}$$

How far does she still have to go?

$$35.4 \text{ km} - 28.0 \text{ km} = \underline{\underline{7.4 \text{ km}}}$$