W-PS Physical Science

Conversion

1 foot = 12 inches

8 Feet = ____ inches

$8 \text{ feet} * \left[\frac{1 \text{ foot}}{12 \text{ inches}}\right] = 1$

$\frac{8}{1} \frac{\text{feet}}{} = \left[\frac{12 \text{ inches}}{1 \text{ foot}}\right] = 96 \text{ inches}$

$15 \text{ dozen} * \left[\frac{12 \text{ donuts}}{1 \text{ dozen}}\right] = 180 \text{ donuts}$

1

1 foot = 12 inches

1 yard = 3 feet

1 mile = 5,280 feet

metric ↔ English

2.54 cm = 1 in

[1 min = 60 sec
1 hr = 60 min
1 day = 24 hr
1 year = 365 days]

1 foot = 12 inches 2.54 cm = 1 in

1 yard = 3 feet

[1 mile = 5,280 feet]

(B) 3 miles = _____ ft $3\,\text{mi} * \frac{5{,}280\,\text{ft}}{1\,\text{mi}} = \boxed{15{,}840\,\text{ft}}$

(R) 42 feet = _____ yd $42\,\text{ft} * \frac{1\,\text{yd}}{3\,\text{ft}} = \frac{42}{3} = \boxed{14\,\text{yd}}$

(L) 28 inches = _____ cm $28\,\text{in} * \frac{2.54\,\text{cm}}{1\,\text{in}} = \boxed{71.12\,\text{cm}}$

[The average house gives out 3 pieces of candy on Halloween.][A typical neighborhood contains 250 houses.] A typical pillow case can hold 320 pieces of candy.

If you plan on visiting 8 neighborhoods — and every house participates — how many pillow cases of candy will you receive?

$$8 \text{ neighborhoods} * \frac{250 \text{ houses}}{1 \text{ neighbor}} * \frac{3 \text{ candy}}{1 \text{ house}} * \frac{1 \text{ case}}{320 \text{ candy}}$$

$$\frac{6000}{320} \text{ cases} = 18.75$$

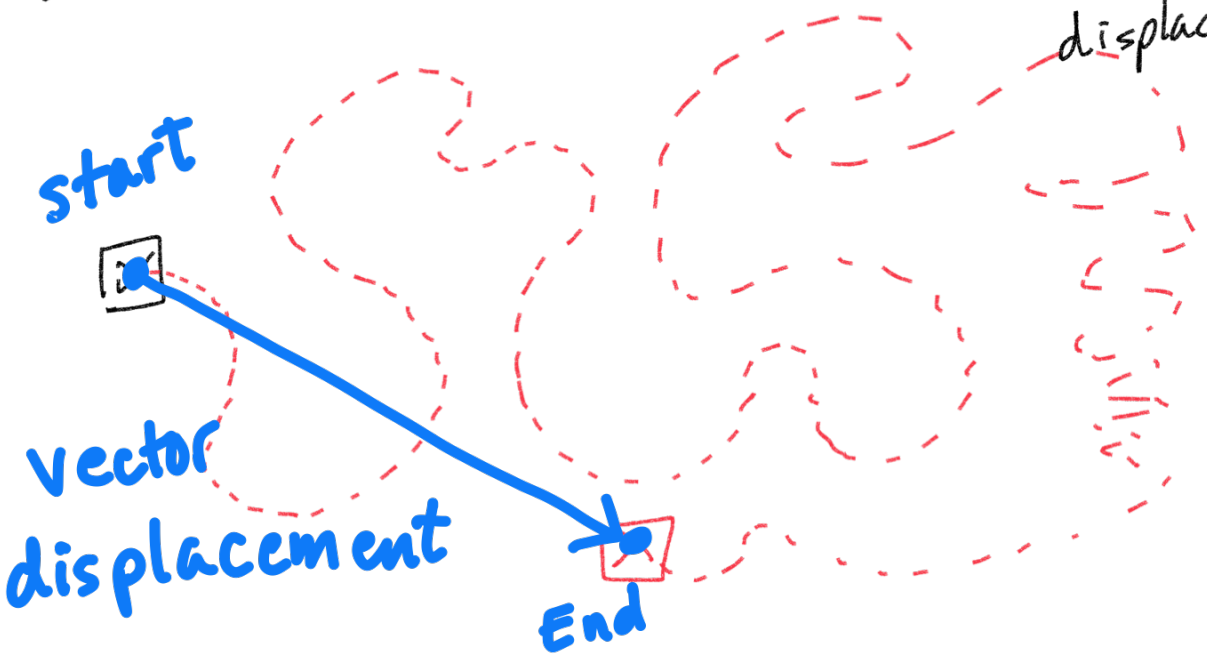
19 pillow cases

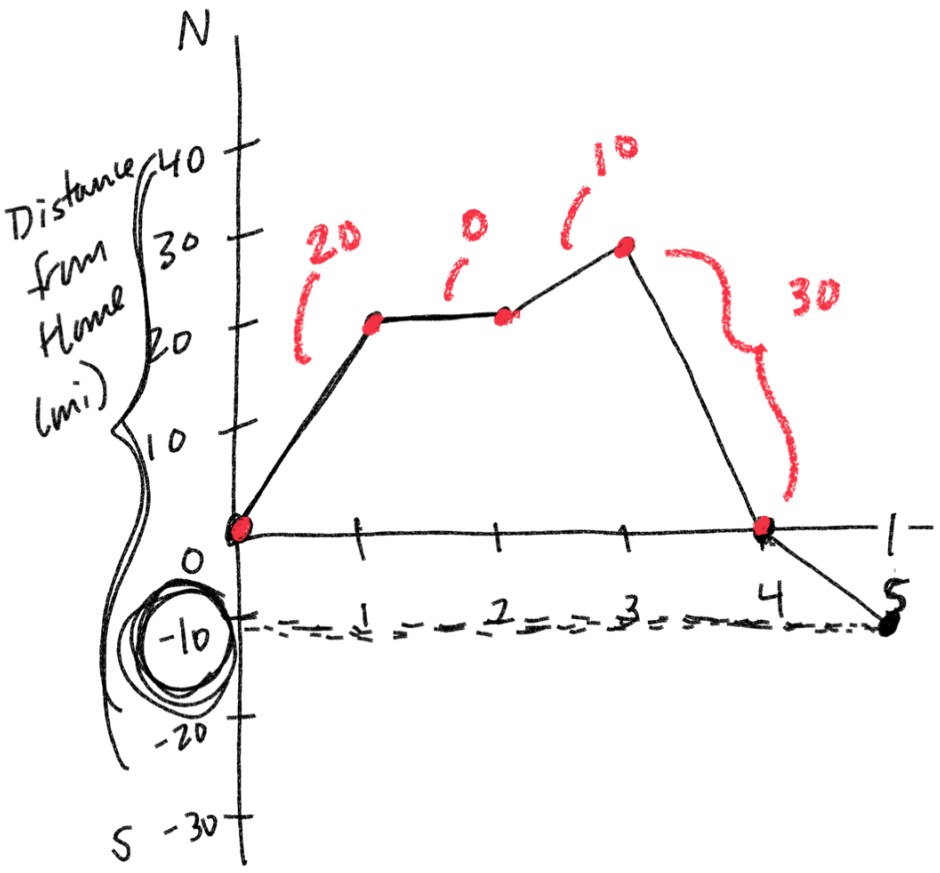
Motion

Displacement is the net change in position

Distance is the entire path length traveled

distance → high
displacement → low





Displacement vs. time

At $t = 4$

displacement = 0 mi

distance = 60 mi

20 + 10 + 30

At $t = 5$ hrs

hr disp = -10 mi

distance = 70 mi

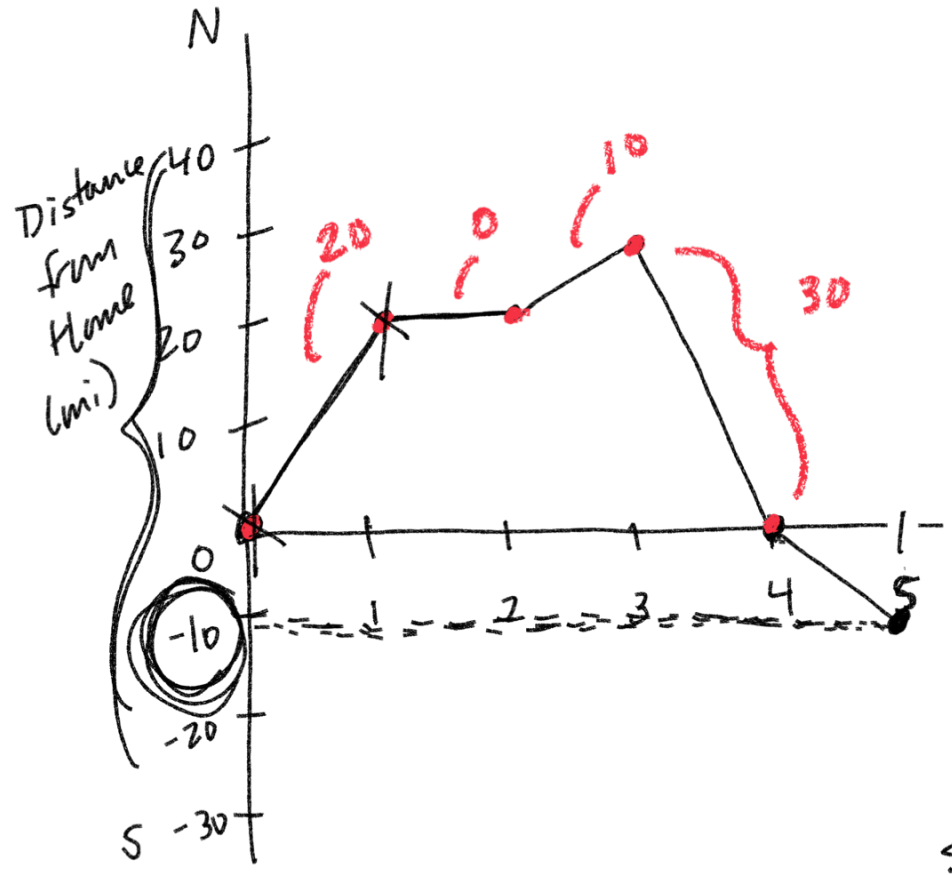
Velocity vs Speed

Vector Quantity | Scalar Quantity

Magnitude ; Direction | Magnitude

$$\text{velocity} = \frac{\text{change in displacement}}{\text{time}}$$

$$\text{speed} = \frac{\text{change in distance}}{\text{time}}$$



velocity at $t = 1$

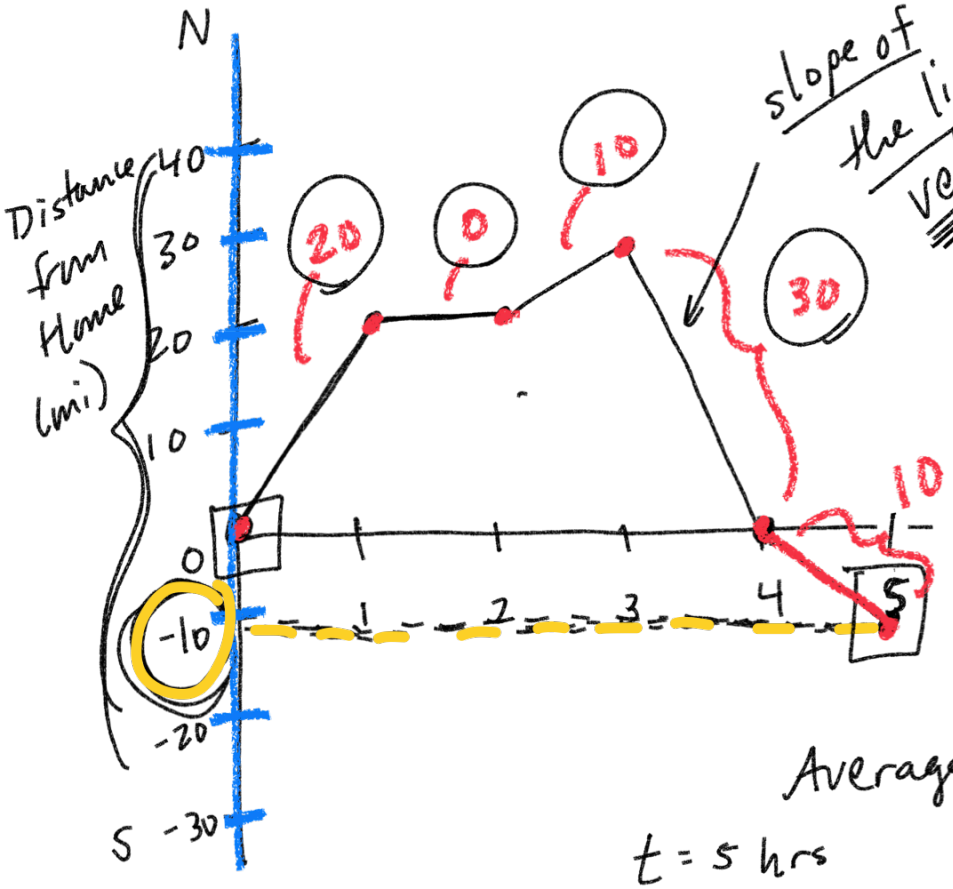
$$vel = \frac{\text{change in position}}{\text{change in time}}$$

$$\frac{20 \text{ mi}}{1 \text{ hr}} = 20 \text{ mi/hr}$$

speed at $t = 1$

$$speed = \frac{\text{change in distance}}{\text{time}}$$

$$\frac{20 \text{ mi}}{1 \text{ hr}} = 20 \text{ mi/hr}$$



slope of the line = velocity

$t = 5$ hr

$$vel = \frac{\text{displacement}}{\text{time}}$$

$$\frac{-10 \text{ mi}}{5 \text{ hrs}} = \boxed{-2 \text{ mi/hr}}$$

Average Speed

$t = 5$ hrs

$$\frac{70 \text{ mi}}{5 \text{ hr}} = \boxed{14 \text{ mi/hr}}$$

website

Quiz 5 due tonight

Quiz 6 due Oct 30th

classmates!

HW

Online HW 7 (Fri)

Quiz 7 (Fri) due Nov 4th