ICP Quiz 1

Name _____
ICP Quiz 1 33 points

1. A researcher conducts an experiment to test the effects of alcohol on people's sense of balance. He divides his subjects into three groups: in one group the participants drink one ounce of alcohol, in another they drink two ounces of alcohol and in a third group the participants drink soda (no alcohol). He then watches as each participant tries to walk on a straight line from one corner of the room to the next and notes how many times they stumble outside the line. The group that drank 2 ounces stepped outside 6 times. The group that drank 1 ounce stepped outside 3 times. The group that drank soda did not step off the line. (10 points)

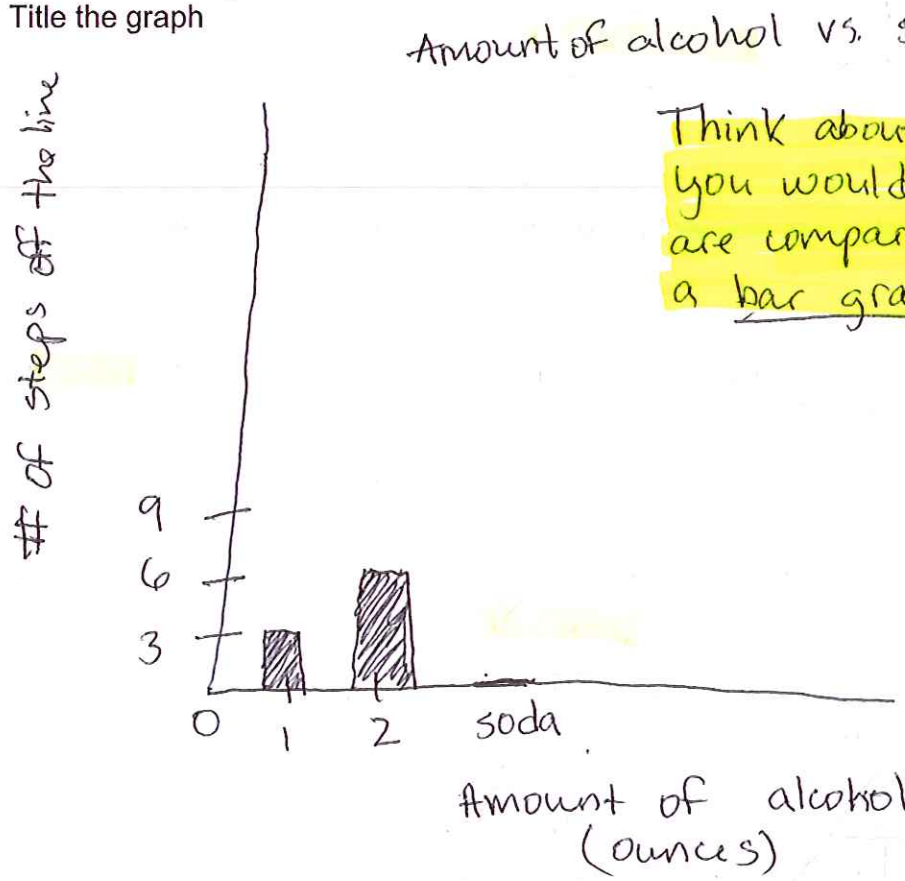
Independent variable alcohol

Dependant variable sense of balance

X	Y
1oz	3 times
2oz	6 times
soda	0 times

Create a graph. Remember to:

- Label the x and y axis
- Title the graph



Think about what graph you would use. Here we are comparing so I selected a bar graph. Look at notes

T: Amt of alcohol vs. sense of balance
I: 1's
L
E
S

Use the stair steps to convert the following units:

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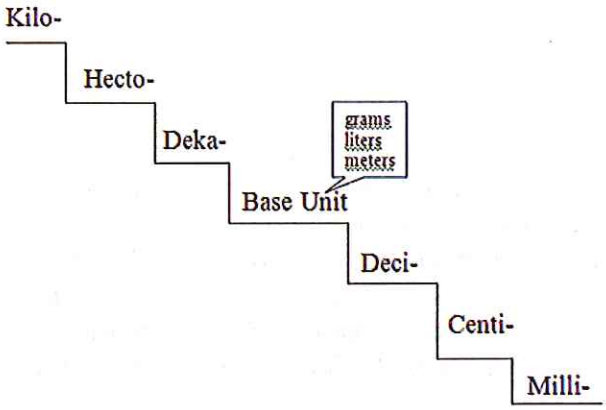


1. How many kilometers are in 45,000 m? (1 point)

45,000 m = 45 km

2. How many millimeters are in 4 m? (1 point)

4 m
4,000 = 4,000 mm

Equations:

Directions: Use the equation above to answer the following questions. Show your work and include the units.

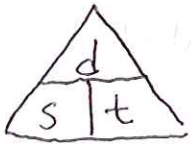
1. A soccer field is about 50 m long. If it takes a person 15 seconds to run its length, how fast (what speed) were they running? (2 points)

d = 50 m s = ?
t = 15 s $s = \frac{d}{t}$

$s = \frac{50\ m}{15\ s}$ = 3 m/s

2. The pitcher's mound in baseball is 70 m from the plate. It takes 4 seconds for a pitch to reach the plate. How fast is the pitch? (2 points)

d = 70 m
t = 4 s
s = ?



$s = \frac{70\ m}{4\ s}$

s = 18 m/s

3. If you drive at 100 km/hr for 6 hours, how far will you go? (2 points)

t = 6 hours d = s × t

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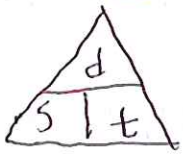
4. A bullet travels at 925 m/s. How long will it take a bullet to go 1500m? (2 points)

$s = 925\ m/s$
$t = ?$
$d = 1500m$



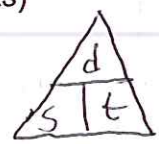
$t = \frac{d}{s}$

$t = \frac{1500m}{925\ m/s}$

$t = 2s$

5. How long will it take light moving at 300,000 km/s to reach us from the sun? The sun is 15,000,000 km from earth. (2 points)

$s = 300,000 km/s$
$d = 15,000,000 km$
$t = ?$



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

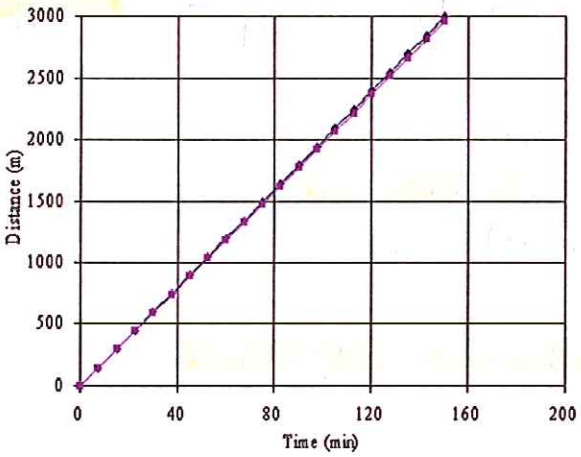
$t = \frac{15,000,000\ km}{300,000\ km/s}$

$t = 50s$

6. What does the slope on a distance versus time graph represent? (1 point)

$\text{Slope} = \frac{\text{rise}}{\text{run}} = \frac{y}{x} = \frac{\text{distance}}{\text{time}} = \text{speed}$

7. This is a graph of an airplane's time vs. distance. Find the plane's velocity. (2 points)



$\text{velocity} = \frac{\text{distance}}{\text{time}} = \frac{y_2 - y_1}{x_2 - x_1}$

you can use any points

point 1 = $(\overset{x}{0}, \overset{y}{0})$

point 2 = $(145, 2,900)$

$\frac{y_2 - y_1}{x_2 - x_1} = \frac{2900 - 0}{145 - 0} = \frac{2900}{145} = 20\frac{m}{s}$

$20\frac{m}{s}$ heading North

(use direction!) because asking for velocity

Use the following graph to answer questions 17-19

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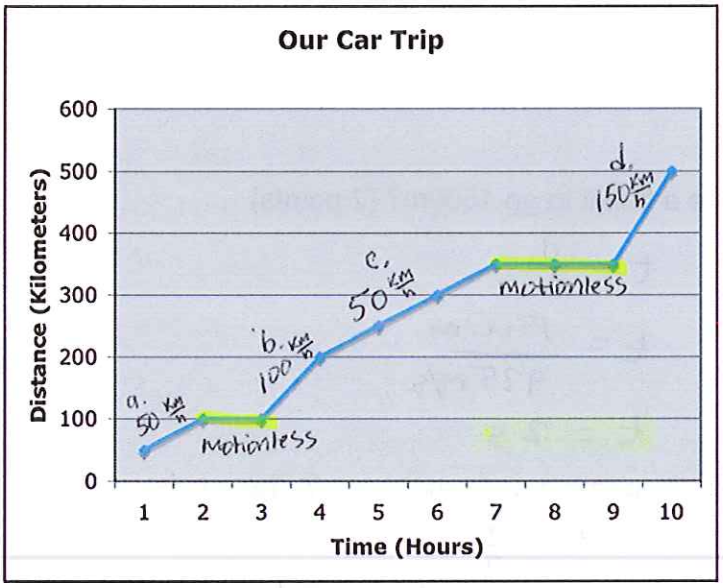

(x_1, y_1) (x_2, y_2) $\quad \Delta 2 - \Delta 1$

$(1, 50) - (2, 100)$ $\quad \frac{100-50}{2-1} = \frac{50}{1}$ a.

$(3, 100) - (4, 200)$ $\quad \frac{200-100}{4-3} = \frac{100}{1}$ b.

$(4, 200) - (7, 350)$ $\quad \frac{350-200}{7-4} = \frac{150}{3} = 50$ c.

$(9, 350) - (10, 500)$ $\quad \frac{500-350}{10-9} = \frac{150}{1}$ d.

8. Between which times, was the car **motionless** (not moving)? (example: between 10 and 12 hours) (1 point)

motionless = time car is not moving
if a car is not moving then distance is equal to 0
Between hours 2 and 3, 7 and 9

9. Between which times was the speed of the car the **fastest? How do you know**? (1 point)

you have to find slope.
Slope = $\frac{\text{Rise}}{\text{Run}} = \frac{y}{x} = \frac{\text{distance}}{\text{time}} = \text{speed}$

Between 9 and 10 hours

10. What was the **average speed of the car** during the trip? (2 points)

$50\frac{Km}{h} + 100\frac{Km}{h} + 50\frac{Km}{h} + 150\frac{Km}{h} = 350\frac{Km}{h}$

1 2 3 4

$\frac{350\frac{Km}{h}}{4} = 88\frac{Km}{h}$

11. What is the difference between speed and velocity? (1 point)

Velocity takes direction into consideration
(look at velocity definition)

12. What is acceleration? (1 point)

Acceleration is the rate at which velocity changes

13. What's the difference between mass and weight?

Weight takes gravity into consideration
(look at weight definitions)