Trimester 1 Review for Final

1. The budget for the Skate King assumes a linear relationship between the number of visitors and daily operating cost. Some sample (*Visitors, operating cost)* values are given in the table below.

   a. Use the given data to complete the table below. *+20*

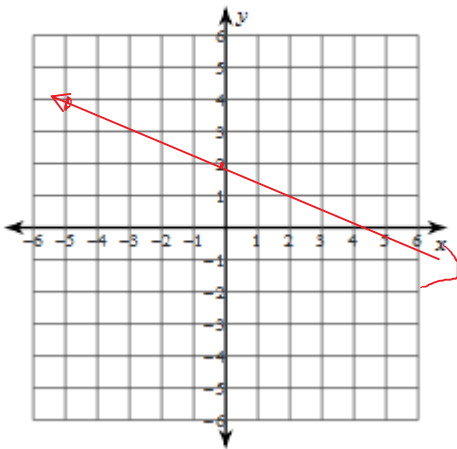 | Number of Students | *0* | 20 | 40 | 60 | *80* |
   |---|---|---|---|---|---|
   | Daily Operating Cost | *120* | $160 | $200 | $240 | *280* |

   +40

   b. Use the completed table to write an equation showing how operating cost *C* depends on number of visitors *v*.

   $$C = 2v + 120$$

Graph the following line.

2) $y = -\dfrac{2}{5}x + 2$

Solve the following equation.

3) $6(5v + 7) - 4v = -34 + 7v$

$$30v + 42 - 4v = -34 + 7v$$
$$-42 \qquad\quad -42$$
$$26v = -76 + 7v$$
$$-7v \qquad\qquad -7v$$
$$\dfrac{19v}{19} = \dfrac{-76}{19}$$
$$v = -4$$

4) The Hurricane Hunters took the following measurements from a hurricane over several days as it developed:

Air Pressure (kPa)	923	956	966	979	990	1,001
Wind Speed (knots)	118	76.3	64.6	65.2	46.9	31.6

They found that the air pressure and wind speed are related in the following way: $y = -1.05x + 1080$ where x is the air pressure in millibars (kPa) and y is the maximum sustained wind speed in knots (nautical miles per hour).

a) What does the slope of the line represent? *As air pressure goes up by 1 kPa, wind speed goes down 1.05 Knots.*

b) The model indicates that a wind speed of 89 knots is associated with what air pressure? Round your answer to the nearest millibar.

Air pressure would be about 944 kPa
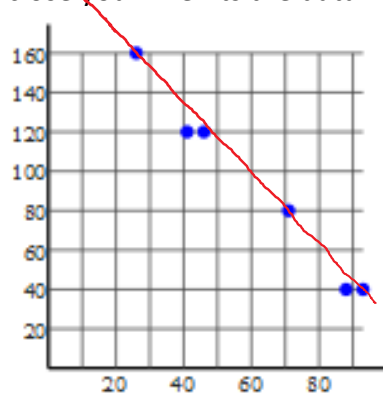
$$89 = -1.05x + 1080$$
$$-1080$$
$$\frac{-991}{-1.05} = \frac{-1.05x}{-1.05}$$
$$x \approx 944$$

5. A. For the data below draw a line of best fit, determine the equation for the line, and then find the residuals in order to determine how close your line fits the data.

X	y	P	R
26	160	161.2	-1.2
41	120	134.2	-14.2
46	120	125.2	-5.2
71	80	80.2	-0.2
88	40	49.6	-9.6
93	40	40.6	-0.6

Total Residual: -31

(60, 100)

(71, 80)

$$\frac{100-80}{60-71} = \frac{20}{-11} = -11$$

$m \approx -1.8$

$$100 = 60(-1.8) + b$$
$$100 = -108 + b$$
$$+108 \qquad +108$$
$$208 = b$$
$$y = -1.8x + 208$$