

# ALGEBRA 1 MIDTERM Review

①  $4(x-7) = 8$  solve for  $x$

②  $x=2$   $y=5$  evaluate  $4x+xy+y^2$

③  $\begin{array}{c|c|c|c|c|c} 4 & 2 & 3 & 4 & 5 & 6 \\ \hline 4 & 3 & 1 & 2 & 6 & 8 \end{array}$  Is this a function? why?

④ Simplify  
 $4(x+7) + 8(2x-1)$

⑤ Solve:  $3x+6=36$

⑥ Solve for  $y$ :  $4x-2y=20$

⑦  $g(x) = 3x^2 - x$

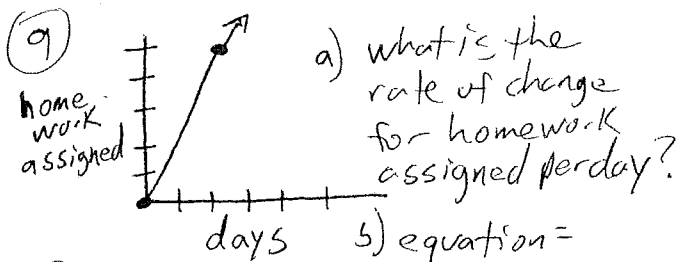
a) find  $g(4)$

b) True or False:  $g(0) > g(1)$

⑧ Sales tax is calculated with function:  $t(x) = 0.09x$

a) find  $t(40)$

b) Explain the meaning of  $t(50) = 4.50$



⑩ 

x	y
0	20
4	15
8	10
12	5
16	0

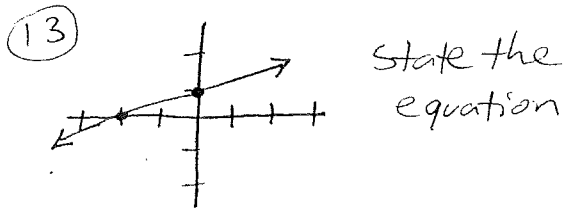
 a) rate of change

b) equation:

c) Why is this Linear? How do you know?

⑪ For Lunch Tom eats  $2\frac{1}{2}$  burritos and for dinner he eats 3 burritos. Tom eats 4 lunches and 3 dinners. How many burritos did he eat.

⑫ Find the slope between  
(2,4) and (5,-1)



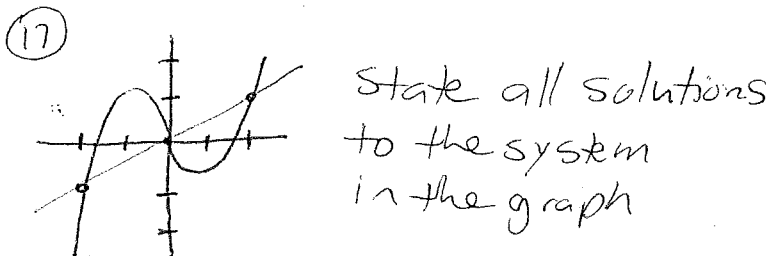
⑭  $y=3x$  if  $x$  increases  
4 then how does  $y$  change?

⑮ given  $y = \frac{1}{2}x - 2$  are  
these points on the line?

a) (6,2)

b) (10,3)

⑯ A submarine is currently  
500 m under the surface  
and is rising toward the  
surface at 10 m per sec.  
write an eq. for the  
elevation of the sub overtime  
(underwater is negative)



⑱ Jim bought  $A$  sodas and  
 $B$  waters. System:

$$A + B = 5$$

$$.75A + 1.25B = 4.75$$

a) State the meaning of  
5    .75    1.25    4.75

b) solve the system.

⑲ Which correlation shows  
the strongest link?

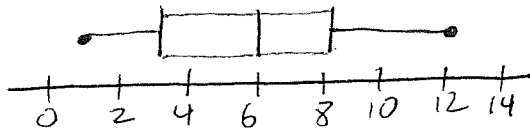
-.9    .82    -.401    .94

(20)

	Male	Female
Yes	4	7
NO	8	4

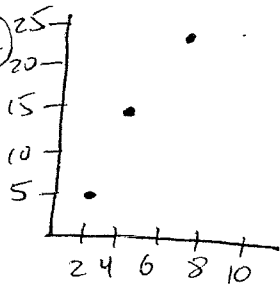
- what percent are male?
- what percent are male who said yes?
- given female, what percent said NO?

(21)



- 5 Number Summary:
- Range:
- 75% are under \_\_\_\_\_
- \_\_\_\_\_ % are over 3.

(22)



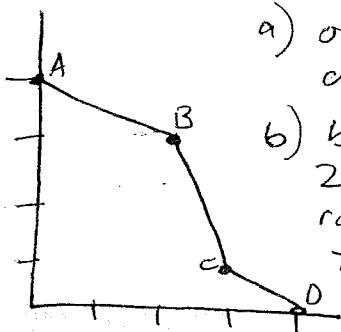
- Describe the association.
- Describe the strength.
- predict  $y$  when  $x = 8$

(23)

x	y
1	4
2	5.2
3	5.9

- regression equation:
- correlation

(24)



- ordered pair at C
- between what 2 points is the rate of descent the greatest?

(25) Evaluate  $4[3(2-1)+4^2]-6^2$

(26)

X	Y
1	4
2	3
3	1
4	30
5	6
6	8
7	6

- a) 5 number sum. of x  
range x
- b) 5 number sum of y  
range y
- c) Ave of X
- d) Ave of y
- e) If the outlier ordered pair is removed, which of the stats in a to d change?

(27) Jenny saves money each week. The function describes the amount in the account since it was opened

$$M(w) = 500 + 40w$$

- a) how much was it the account when opened?
- b) how much is added each week?
- c) Find  $M(6)$  and explain the meaning.

(28) TW Cable charge \$80 per month for cable plus \$4 per movie rented.

- a) write an equation for the bill
- b) what is bill if 4 movies are rented?
- c) how many can be rented before the bill reaches \$100

(29) Taxi charges using  
 $y = 5 + .25(\text{miles})$

- a) what is the fee?
- b) how much per mile?
- c) how far can you go with \$20
- d) rates go up 20% write the new equation.

ALGEBRA 1 MIDTERM Review

①  $4(x-7) = 8$  solve for x

$$\begin{array}{r} 4x - 28 = 8 \\ +28 \quad +28 \\ \hline 4x = 36 \\ \div 4 \quad \div 4 \\ \hline x = 9 \end{array}$$

Key

$4(2) + (2)(5) + (5)^2$   
 $8 + 10 + 25 = 43$

②  $x=2$   $y=5$  evaluate  $4x+xy+y$

③

4	2	3	4	5	6
4	3	1	2	6	8

Is this a function? why?  
 $f(4)=4$   
 $f(4)=2$

Therefore is NOT a function

④ Simplify  $4(x+7) + 8(2x-1)$

$4x+28+16x-8 = 20x+20$

⑤ Solve:  $3x+6=36$

$$\begin{array}{r} 3x + 6 = 36 \\ -6 \quad -6 \\ \hline 3x = 30 \\ \div 3 \quad \div 3 \\ \hline x = 10 \end{array}$$

$$\begin{array}{r} 4x - 2y = 20 \\ -4x \quad -4x \\ \hline -2y = 20 - 4x \\ \div -2 \quad \div -2 \\ \hline y = \frac{20}{-2} + \frac{-4x}{-2} \\ y = -10 + 2x \end{array}$$

⑥ Solve for y:  $4x-2y=20$

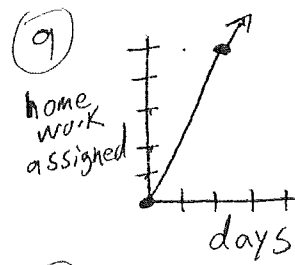
⑦  $g(x) = 3x^2 - x$   
 a) find  $g(4) = 3(4)^2 - (4) = 44$

b) True or False:  $g(0) > g(1)$   
 $3(0)^2 - 0 > 3(1)^2 - 1$   
 $0 > 2$  False

⑧ Sales tax is calculated with function:  $t(x) = 0.09x$

a) find  $t(40) = .09(40) = 3.6$

b) Explain the meaning of  $t(50) = 4.50$   
 Bill = 50  
 Tax = 4.50



a) what is the rate of change - slope for homework assigned per day?  
 $\frac{5 \text{ HW}}{2 \text{ days}} = 2.5 \text{ HW/day}$

b) equation =  $y = 2.5x + 0$  or  $y = \frac{5}{2}x$   
 $\text{HW} = 2.5d$

⑩

x	y
0	20
4	15
8	10
12	5
16	0

a) rate of change  $\frac{\Delta y}{\Delta x} = \frac{-5}{4}$  or  $-1.25$

b) equation:  $y = \frac{-5}{4}x + 20$

c) Why is this Linear? How do you know? Yes, pattern has constant change

⑪ For Lunch Tom eats  $2\frac{1}{2}$  burritos and for dinner he eats 3 burritos. Tom eats 4 Lunches and 3 dinners. How many burritos did he eat.

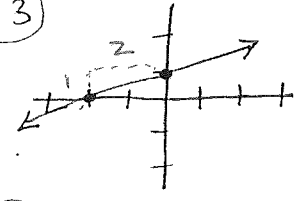
$$\begin{array}{r} 3D + 4L \\ 3(3) + 4(2.5) \\ 9 + 10 \\ 19 \end{array}$$

12) Find the slope between  $(2,4)$  and  $(5,-1)$

$$\Delta x \begin{array}{c|c} x & y \\ \hline 2 & 4 \\ 5 & -1 \end{array} \Delta y$$

$$+3 \quad -5 \quad \frac{\Delta y}{\Delta x} = \frac{-5}{3} \text{ or } -1.\bar{6}$$

13) State the equation



$$y = \frac{1}{2}x + 1$$

14)  $y = 3x$  if  $x$  increases 4 then how does  $y$  change?

x	y
0	0
4	12

up 12

15) given  $y = \frac{1}{2}x - 2$  are these points on the line?

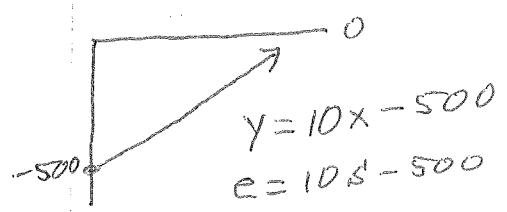
- a)  $(6,2)$  NO
- b)  $(10,3)$  YES

$$3 = \frac{1}{2}(10) - 2$$

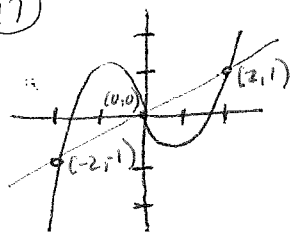
$$3 = 5 - 2$$

$$3 = 3$$

16) A submarine is currently 500 m under the surface and is rising toward the surface at 10 m per sec. write an eq. for the elevation of the sub overtime (underwater is negative)



17) State all solutions to the system in the graph



- $(-2, -1)$
- $(0, 0)$
- $(2, 1)$

\* 18) Jin bought A sodas and B waters. System:

$$A + B = 5$$

$$.75A + 1.25B = 4.75$$

$$A = 5 - B$$

$$.75(5 - B) + 1.25B = 4.75$$

$$3.75 - .75B + 1.25B = 4.75$$

$$3.75 + .50B = 4.75$$

a) State the meaning of

5 total bought  
 .75 cost of 1 soda  
 1.25 cost of 1 water  
 4.75 total spent

b) Solve the system.

$$3.75 + .50B = 4.75$$

$$-.75 \quad -3.75$$

$$.5B = 1$$

$$\frac{.5B}{.5} = \frac{1}{.5}$$

~~2 waters~~  
 $B = 2$  waters  
 $A = 3$  sodas

19) Which correlation shows the strongest link?

- .9
- .82
- .401
- .94

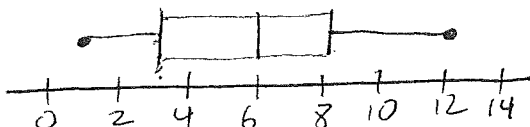


20

	Male	Female	
Yes	4	7	11
No	8	4	12
	12	11	23

- a) what percent are male?  $\frac{12}{23} = 52\%$   
 b) what percent are male who said yes?  $\frac{4}{23} = 17\%$   
 c) given female, what percent said no?  $\frac{4}{11} = 36\%$

21

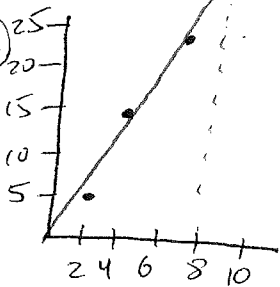


- a) 5 Number Summary: 

Min	Q <sub>1</sub>	Med	Q <sub>3</sub>	Max
1	3	6	8	12

  
 b) Range:  $12 - 1 = 11$   
 c) 75% are under  $Q_3 = 8$   
 d) 75% are over 3.

22



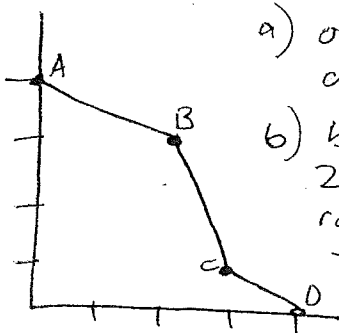
- a) Describe the association. pos. linear  
 b) Describe the strength. very strong  
 c) predict  $y =$  ~~approx~~ approx = 32 when  $x = 8$

23

X	Y
1	4
2	5.2
3	5.9

- a) regression equation:  $y = .95x + 3.13$   
 b) correlation  $r = .989$

24



- a) ordered pair at C (3, 1)  
 b) between what 2 points is the rate of descent the greatest? B & C is the steepest slope

\* (25) Evaluate  $4[3(2-1)+4^2]-6^2$  40

	L1	L2
(26)	X	Y
	1	4
	2	3
	3	1
outlier	4	30
	5	6
	6	8
	7	6

- a) 5 number sum. of x
- b) 5 number sum of y
- c) Ave of X = 4
- d) Ave of Y = 8.28
- e) If the outlier ordered pair is removed, which of the stats in a to d change?

Min	Q1	Med	Q3	Max	Range
1	2	4	6	7	6
1	3	6	8	30	29
1	3	5	6	8	7

- mean of y
- med of y
- Q3 of y
- Max of y
- range of y

(27) Jerry saves money each week. The function describes the amount in the account since it was opened

$$M(w) = 500 + 40w$$

- a) how much was it the account when opened?  $M(0) = 500$
- b) how much is added each week? rate = \$40/week
- c) Find  $M(6)$  and explain the meaning.  $M(6) = 500 + 40(6) = 740$  week 6, money in account is \$740

(28) TW Cable charge \$80 per month for cable plus \$4 per movie rented.

- a) write an equation for the bill  $y = 80 + 4x$
- b) what is bill if 4 movies are rented?  $B = 80 + 4m$   
 $B = 80 + 4(4) = 96$
- c) how many can be rented before the bill reaches \$100

$$100 = 80 + 4m$$

$$\frac{100 - 80}{4} = \frac{4m}{4}$$

$$20 = m \rightarrow 5 \text{ movies}$$

(29) TAXI charges using  $y = 5 + .25(\text{miles})$

- a) what is the fee? \$5
- b) how much per mile? \$.25
- c) how far can you go with \$20
- d) rates go up 20% write the new equation.  $.2(5) = 1$  } increases  
 $.2(.25) = .05$  }

$$20 = 5 + .25m$$

$$\frac{20 - 5}{.25} = \frac{.25m}{.25}$$

$$15 = m$$

$$60 \text{ miles} = m$$

$$1 + 5 = 6$$

$$.05 + .25 = 30$$

$$y = 6 + .3(\text{miles})$$