

Final Exam Review

$$\rightarrow SA = 2\pi r^2 + 2\pi rh$$

- 1.) A solid cylinder has a total surface area of 879.2 square inches and a radius of 7 inches. Find its height and volume.

$$879.2 = 2(3.14)(7^2) + 2(3.14)(7)h$$

$$879.2 = 307.72 + 43.96h$$

$$571.48 = 43.96h \quad \boxed{h = 13 \text{ in}}$$

$$V = \pi r^2 h$$

$$= 3.14(7^2)(13)$$

$$\boxed{V = 2000.18 \text{ in}^3}$$

- 2.) A solid cylinder has a volume of 577.76 cubic feet and a diameter of 8 feet. Find its radius, height, and total surface area.

$$\boxed{r = 4 \text{ ft}}$$

$$577.76 = 3.14(4^2)h$$

$$577.76 = 50.24h$$

$$\boxed{h = 11.5 \text{ ft}}$$

$$SA = 2(3.14)(4^2) + 2(3.14)(4)(11.5)$$

$$= 100.48 + 288.88$$

$$\boxed{SA = 389.36 \text{ ft}^2}$$

- 3.) Use the given dimensions to find the volume of each pyramid.

- a. A square pyramid with a height of 10.5 feet and a base that is 6 feet on each side

$$V = Bh$$

$$V = \frac{6^2(10.5)}{3} = \boxed{126 \text{ ft}^3}$$

- b. A rectangular pyramid with a height of $2\frac{3}{4}$ centimeters and a base that measures 5 centimeters by 3 centimeters

$$V = Bh$$

$$= \frac{(5 \cdot 3)(2.75)}{3} = \boxed{13.75 \text{ cm}^3}$$

- 4.) A solid cone has a volume of 8,792 cubic feet, a diameter of 40 feet, and a slant height of 29 feet. Find its radius, height, and total surface area.

$$\boxed{r = 20 \text{ ft}}$$

$$V = \frac{1}{3}\pi r^2 h$$

$$8792 = \frac{1}{3}(3.14)(20^2)h$$

$$8792 = \frac{1256}{3}h$$

$$26376 = 1256h$$

$$\boxed{h = 21 \text{ ft}}$$

$$SA = \pi r^2 + \pi r l$$

$$= 3.14(20^2) + 3.14(20)(29)$$

- 5.) A solid sphere has a radius of 15 feet. Find its diameter and surface area.

$$\boxed{d = 30 \text{ ft}}$$

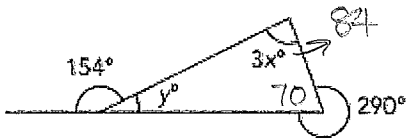
$$SA = 4\pi r^2$$

$$= 4(3.14)(15^2)$$

$$\boxed{SA = 2826 \text{ ft}^2}$$

$$\boxed{SA = 3077.2 \text{ ft}^2}$$

- 6.) Find the value of each variable.



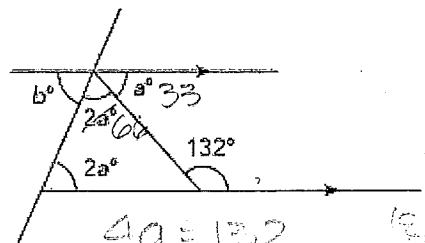
$$3x + 70 = 154$$

$$3x = 84$$

$$\boxed{x = 28}$$

$$\begin{array}{r} 84 \quad 180 \\ + 70 \quad -154 \\ \hline 154 \quad 26 \end{array}$$

$$\boxed{y = 26}$$



$$4a = 132$$

$$\boxed{a = 33}$$

$$\boxed{b = 81}$$

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7.) A rectangular playing field shown on the map has an area of 45 square inches. What would this area be on another map drawn to a scale of 1 inch : 5 miles?

$sf = 5$

$Area_{map} = 45 in^2$

$A = 1125 mi^2$

$\times 5^2 = 25$

8.) You select an integer randomly from 1 to 100.

a) How many outcomes are in the sample space?

100 outcomes

b) If X is the event that the selected integer is a factor of 1,650, what are the outcomes favorable to event X?

$X = \{1, 2, 3, 5, 6, 10, 11, 15, 22, 25, 30, 33, 50, 55, 66, 75\}$

- 1. 1650
- 2. 825
- 3. 550
- 5. 330
- 6. 275
- 10. 165
- 11. 150
- 15. 110
- 22. 75
- 25. 66
- 33. 50
- 50. 33

c) Find P(X).

$P(X) = \frac{16}{100} = \frac{4}{25}$

d) If Y is the event that the selected integer is a multiple of 7, what is the probability of the complement of event Y?

$P(Y^c) = \frac{86}{100} = \frac{43}{50}$

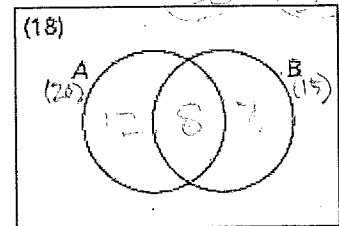
9.) The Venn diagram shows a sample space of 45 outcomes. There are 18 outcomes that are not favorable to event A nor to event B. Event A has 20 favorable outcomes while event B has 15 favorable outcomes.

a) Find P(A), P(B), and P(A').

$P(A) = \frac{20}{45} = \frac{4}{9}$ $P(B) = \frac{15}{45} = \frac{1}{3}$

$P(A^c) = \frac{5}{9}$

S(45)



$45 - 18 = 27$
 $27 - 20 = 7$
 $27 - 15 = 12$
 $12 - 7 = 5$

b) Let C be the event consisting of outcomes which are favorable to both events A and B. How many outcomes are favorable to event C?

$P(C) = \frac{8}{45}$

c) Find P(C).

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10.) Simplify each expression. Write your answer in exponential notation.

$$\frac{\left[\left(\frac{3}{7}\right)^2 \cdot \left(\frac{3}{7}\right)^3\right]^3}{\left[\left(\frac{3}{7}\right)^2\right]^3} = \frac{\left(\frac{3}{7}\right)^{15}}{\left(\frac{3}{7}\right)^6} = \left(\frac{3}{7}\right)^9$$

$$\frac{(m^5 \cdot m^7)^4 \div (3m^2)^3}{(3m^2)^3} = \frac{m^{48}}{27m^6} = \frac{m^{42}}{27}$$

OR $\frac{1}{27} m^{42}$

11.) Simplify each expression. Write your answer using a positive exponent.

$$\frac{4^5 \cdot (-5^5) \cdot 5^0}{2^{-5}} = \frac{(-20)^5}{2^{-5}} = (-20)^5 \cdot 2^5 = (-40)^5$$

$$\frac{81^6}{81^3} \cdot \frac{16^0 \cdot 3}{3^3 \cdot 9^3} = 81^3 \cdot \frac{1}{27^3} = \frac{81^3}{27^3} = 3^3$$

$$12^{-3} \cdot \frac{5^0 \cdot 12^{-2}}{4^{-5}} = \frac{12^{-3} \cdot 12^{-2}}{4^{-5}} = \frac{12^{-5}}{4^{-5}} = 3^{-5} = \frac{1}{3^5}$$

$$8^{-5} \cdot (6^0)^{-5} \cdot \left(\frac{1}{2}\right)^{-5} \div 3^{-5} = \frac{4^{-5}}{3^{-5}} = \left(\frac{4}{3}\right)^5$$

12.) Express each decimal as a fraction, without the use of a calculator.

$x = .4666$
 $0x = 4.666$
 $00x = 46.666$
 $10x = 466.6$
 $90x = 42$

$0.4\bar{6}$

$x = \frac{42}{90} = \frac{7}{15}$

$x = .74111$

$$\begin{array}{r} 100x = 74.111 \\ - 1000x = 741.111 \\ \hline - 100x = 74.111 \\ \hline 900x = 667 \end{array}$$

$x = \frac{667}{900}$

13.) Tell whether each equation has one solution, no solution, or an infinite number of solutions. Show your work.

$$8 - 5x = 11x - 24$$

$$30 = 16x$$

$$x = \frac{30}{16}$$

$$x = \frac{15}{8}$$

one soln

$$8x + 6 = 3\left(\frac{8}{3}x + 2\right)$$

$$8x + 6 = 8x + 6$$

∞ solns

14.) Find the slope of the line passing through each pair of points.

(1, 6) and (5, 9)

$$m = \frac{9-6}{5-1} = \frac{3}{4}$$

Accelerated 7/8

(3, 2) and (7, -3)

$$m = \frac{2-3}{3-7} = \frac{-1}{-4} = \frac{1}{4}$$

Final Exam Review

$x =$

- 15.) Express x in terms of y . Find the value of x when $y = 4$.

$$4 \left(\frac{3y + x}{4} + \frac{y}{2} \right) = (10)4$$

$$3y + x + 2y = 40$$

$$5y + x = 40$$

$$x = 40 - 5y$$

$$x = 40 - 5(4)$$

$$x = 40 - 20$$

$$x = 20$$

- 16.) Write an equation of the line parallel to $3x + 5 = 2y$ that has a y -intercept of -1 .

$$2y = 3x + 5$$

$$y = \frac{3}{2}x + \frac{5}{2}$$

$$m = \frac{3}{2}$$

$$y = \frac{3}{2}x - 1$$

- 17.) A line has slope 7 and passes through the point $(1, 9)$. Write an equation of the line.

$$y = mx + b$$

$$9 = 7(1) + b$$

$$b = 2$$

$$y = 7x + 2$$

- 18.) Write an equation of the line that passes through the point $(0, 0)$ and is parallel to $3y - 2x = 6$.

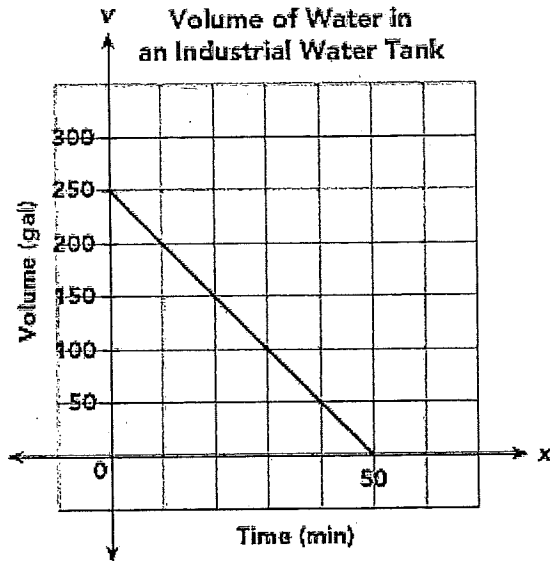
$$3y - 2x = 6$$

$$3y = 2x + 6$$

$$y = \frac{2}{3}x + 2$$

$$y = \frac{2}{3}x$$

- 19.) A water tank filled to capacity has a leak. The graph shows the volume of water, V gallons, after x minutes.



- a) Find the vertical intercept and explain what information it gives about the situation. $(0, 250)$ the volume of the tank before it begins leaking
- b) Find the slope of the graph and explain what information it gives about the situation.

Accelerated $7/8$ $m = \frac{-50}{10} = -5 \Rightarrow$ the tank leaks 5 gallons of H_2O per min

Exam Review

Solve each system of linear equations by using the elimination or substitution method. Explain your choice of method.

SUBS

$$\begin{aligned} x &= y - 5 \\ x - y + 5 &= 0 \\ x + 4y &= 25 \end{aligned}$$

$$\begin{aligned} 5y &= 30 \\ y &= 6 \\ x &= 6 - 5 \\ x &= 1 \end{aligned}$$

$$\begin{aligned} (y-5) + 4y &= 25 \\ 5y - 5 &= 25 \\ 5y &= 30 \\ y &= 6 \end{aligned}$$

ELIM

$$\begin{aligned} 6x + 4y &= 64 \\ -3(2x + 3y) &= -23 \\ \hline -6x - 9y &= -69 \\ \hline -5y &= -5 \\ y &= 1 \end{aligned}$$

$$\begin{aligned} 6x + 4(1) &= 64 \\ 6x &= 60 \\ x &= 10 \end{aligned}$$

(10, 1)

21.) Identify whether each system of linear equations is inconsistent or dependent. Justify your answer.

inconsistent
(no soln)
↓
parallel
lines
w/ same
slope

$$\begin{aligned} \frac{1}{3}x - 3y &= 1 \\ x &= 9y + 8 \end{aligned}$$

$$\frac{1}{3}(9y + 8) - 3y = 1$$

$$3y + \frac{8}{3} - 3y = 1$$

$$\frac{8}{3} \neq 1$$

$$\begin{aligned} 7x - 14y - 28 &= 0 \\ 3x &= 12 - 6y \\ -6y &= 3x - 12 \\ y &= -\frac{1}{2}x + 2 \end{aligned}$$

$$\begin{aligned} -14y &= -7x + 28 \\ y &= \frac{1}{2}x - 2 \end{aligned}$$

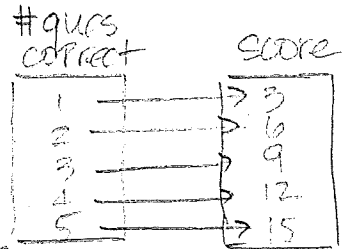
consistent
(one soln)

22.) Mr. Roderick recorded the number of questions students answered correctly on a quiz and their corresponding quiz score.

Number of Questions Answered Correctly	1	2	3	4	5
Quiz Score	3	6	9	12	15

Draw a mapping diagram to represent the relation between the number of questions answered correctly and the total score obtained. Is this relation a function? Explain.

Yes it is a fn.
It is a one-to-one relation



23.) Mr. Nelson is 9 times as old as his son, John. In 9 years' time, Mr. Nelson will be three times as old as his son. How old is each of them now?

SON	x	x+9
Mr. N	9x	9x+9
NOW	in 9 years	

$$\begin{aligned} 9x + 9 &= 3(x + 9) \\ 9x + 9 &= 3x + 27 \\ 6x &= 18 \\ x &= 3 \end{aligned}$$

Currently
SON = 3 yrs old
Mr N = 27 yrs old

24.) At a supermarket, 2 pounds of ham and 3 pounds of turkey are sold for \$92. Mrs. Field bought 5 pounds of ham and 2 pounds of turkey for \$120. Find the price of 1 pound of each item.

$$\begin{aligned} -2(2h + 3t) &= -92 \Rightarrow -4h - 6t = -184 \\ 3(5h + 2t) &= 120 \Rightarrow 15h + 6t = 360 \end{aligned}$$

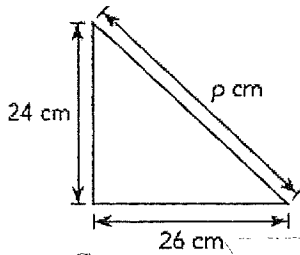
ham = \$16/lb
turkey = \$20/lb

$$\begin{aligned} 11h &= 176 \\ h &= 16 \end{aligned}$$

$$\begin{aligned} 2(16) + 3t &= 92 \\ 32 + 3t &= 92 \\ 3t &= 60 \\ t &= 20 \end{aligned}$$

Final Exam Review

25.) Find the value of each variable. Round your answer to the nearest tenth of a unit when you can.

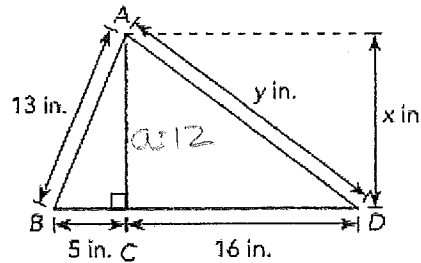


$$24^2 + 26^2 = p^2$$

$$576 + 676 = p^2$$

$$p^2 = 1252$$

$$p = 35.4$$



$$5^2 + a^2 = 13^2 \Rightarrow a = 12$$

$$25 + a^2 = 169$$

$$a^2 = 144$$

$$12^2 + 16^2 = y^2$$

$$144 + 256 = y^2$$

$$y^2 = 400$$

$$y = 20$$

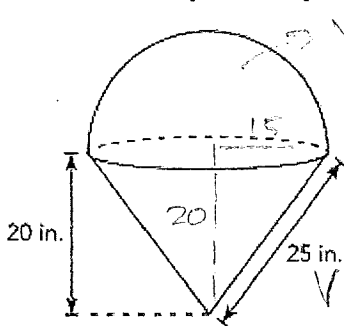
26.) Find the volume of each composite solid. Use 3.14 as an approximation of π . If necessary, round your answer to the nearest tenth.

$$20^2 - 0^2 = 25^2$$

$$400 + a^2 = 625$$

$$a^2 = 225$$

$$a = 15$$



$$V = \frac{2}{3} \pi r^3$$

$$= \frac{2}{3} (3.14)(15^3)$$

$$= 7065$$

$$V = \frac{1}{3} \pi r^2 h$$

$$= \frac{1}{3} (3.14)(15^2)(20)$$

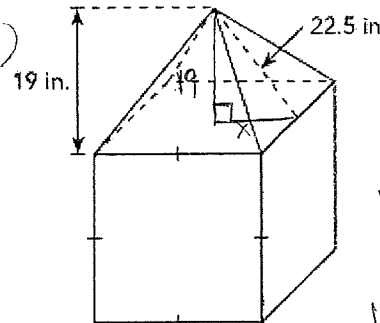
$$= 4710$$

$$V = 7065$$

$$+ 4710$$

$$\hline 11,775$$

in³



$$19^2 + x^2 = 22.5^2$$

$$361 + x^2 = 506.25$$

$$x^2 = 145.25$$

$$x = 12.1$$

$$V = e^3$$

$$= (12.1)^3$$

$$V = 14,172.5$$

cube

$$12.1(2)$$

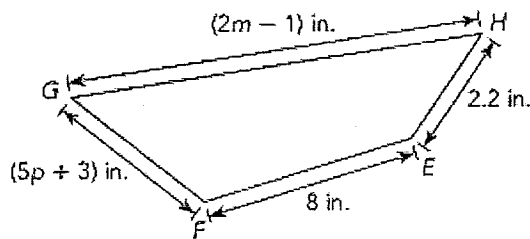
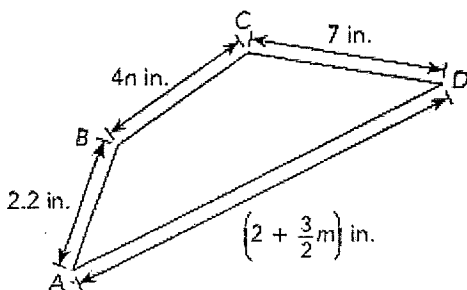
$$= 24.2$$

$$V_{pyr} = \frac{1}{3} Bh$$

$$= \frac{1}{3} (24.2)^2 (19)$$

$$= 3709.1$$

27.) The diagram shows two plots of lands, ABCD and HEFG.



a) Name the shape congruent to ABCD.

$$ABCD \cong HEFG$$

b) Find the values of m, n, and p.

$$4n = 8$$

$$n = 2$$

$$2 + \frac{3}{2}m = 2m - 1$$

$$3 = \frac{2m - 3m}{2}$$

$$3 = \frac{-1m}{2}$$

$$m = 6$$

$$5p + 3 = 7$$

$$5p = 4$$

$$p = \frac{4}{5}$$

Total

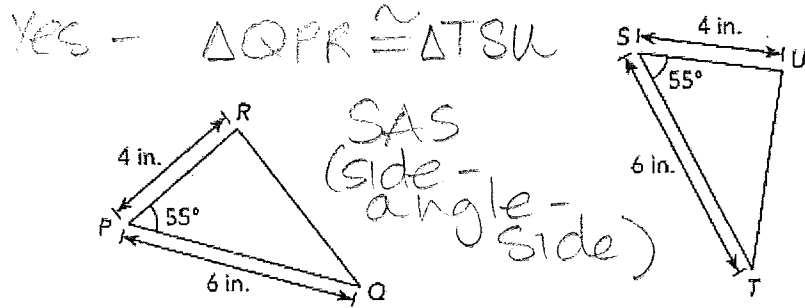
$$14,172.5$$

$$+ 3,709.1$$

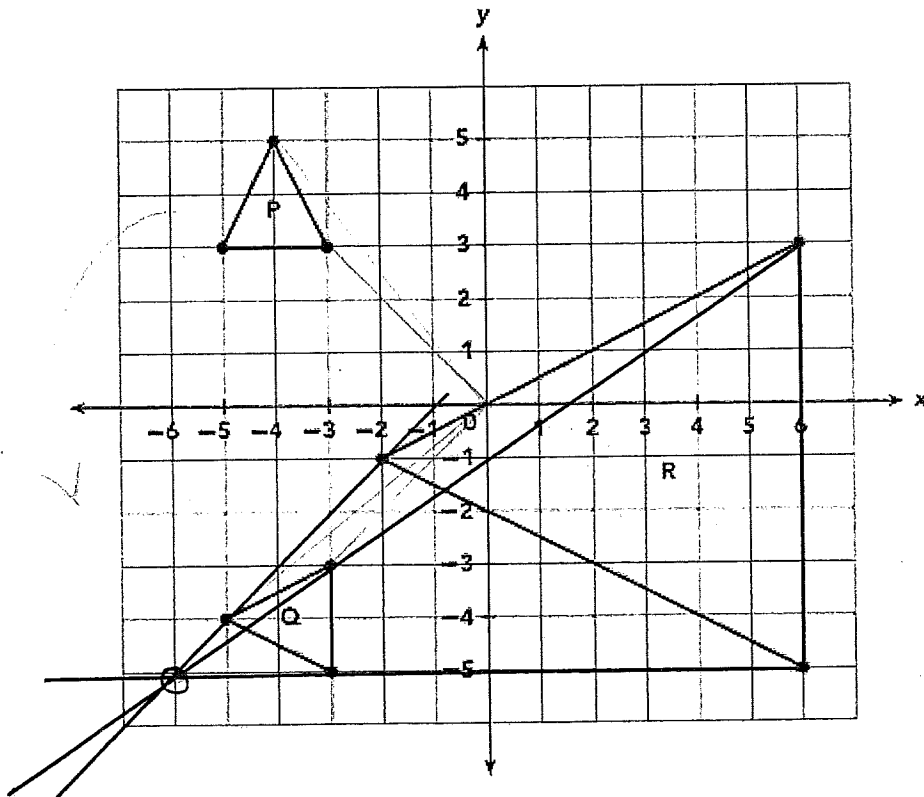
$$\hline 17,881.6$$

Final Exam Review

28.) State whether the triangles are congruent. If they are congruent, write the statement of congruence and state the test used.



29.) Triangle P with vertices $(-5, 3)$, $(-4, 5)$ and $(-3, 3)$ is mapped onto triangle Q. Then triangle Q is mapped onto triangle R as shown on the coordinate plane.



a) Describe the transformation that maps triangle P onto triangle Q.

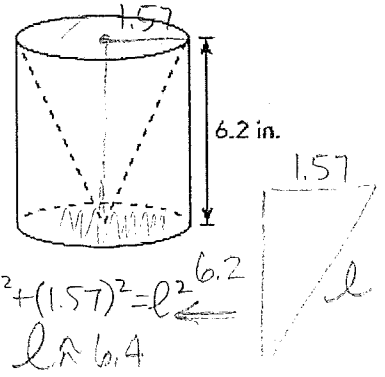
90° ccw rotation about the origin (0,0)

b) Describe the transformation that maps triangle Q onto triangle R.

dilation of $sf = 4$ w/cod @ $(-6, -5)$

Final Exam Review

30.) A cone with height 6.2 inches is removed from a cylinder. The volume of the cone is 16 cubic inches.



a) Find the radius, r , of the cone. Use 3.14 as an approximation for π . Round your answer to the nearest hundredth.

$$V = \frac{1}{3} \pi r^2 h$$

$$16 = \frac{1}{3} (3.14) r^2 (6.2)$$

$$48 = 19.468 r^2$$

$$r^2 = 2.465$$

$$r = 1.57 \text{ in}$$

b) Find the total surface area of the remaining solid. Round your answer to the nearest square inch.

$$SA = \pi r^2 + 2\pi r h$$

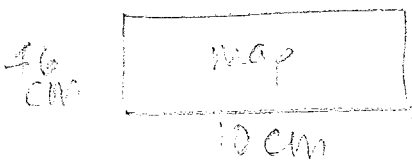
$$= 3.14(1.57^2) + 2(3.14)(1.57)(6.2)$$

$$= 7.759786 + 61.1298$$

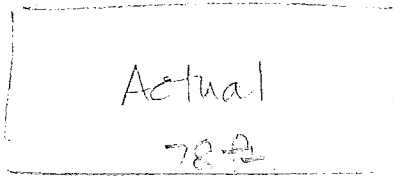
$$= 68.8896$$

$$SA \approx 69 \text{ in}^2$$

31.) A tennis court is 10 centimeters long and 4.6 centimeters wide on a map drawing. The actual length of the tennis court is 78 feet long. What is the actual width of the tennis court if the map drawing is a dilation of the actual court?



\rightarrow $\frac{78}{10} = 7.8$



$$+ \pi r l$$

$$+ 3.14(1.57)(6.4) = 31.6$$

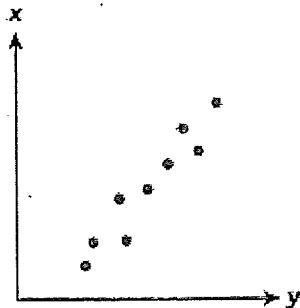
$$4.6 \times 7.8 = 35.88 \text{ ft}$$

$$69 + 31.6 = 100.6$$

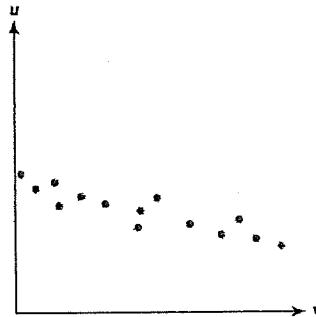
$$= 101 \text{ in}^2$$

(including inside)

32.) Describe the association between the bivariate data shown in each scatter plot.

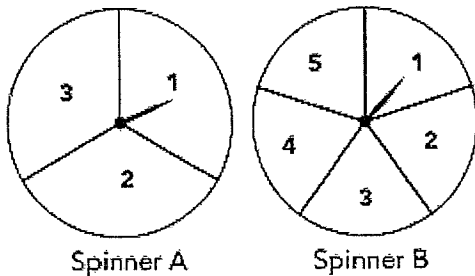


strong, positive linear



Strong, neg., linear

33.) Draw a possibility diagram to represent the possible outcomes when Spinners A and B are spun. Then find the total number of possible outcomes.



	A		
	1	2	3
1	1,1	1,2	1,3
2	2,1	2,2	2,3
3	3,1	3,2	3,3
4	4,1	4,2	4,3
5	5,1	5,2	5,3

15 possible outcomes

Final Exam Review

34.) Potential college students were surveyed to find out if they prefer guided or self-guided tours when visiting a college campus. The results of the survey are shown in the two-way table.

Tour Preference

		Guided	Self-Guided	Total
Gender	Male	3	8	11
	Female	5	4	9
	Total	8	12	20

a) Find the number of males who prefer guided tours.

3

b) Find the number of females who prefer self-guided tours.

4

c) Find the number of potential college students who prefer guided tours.

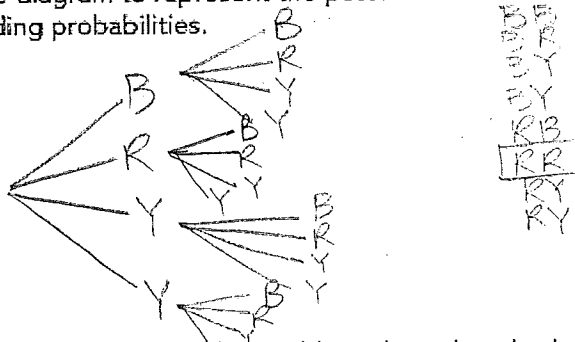
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d) Find the number of potential college students who prefer self-guided tours.

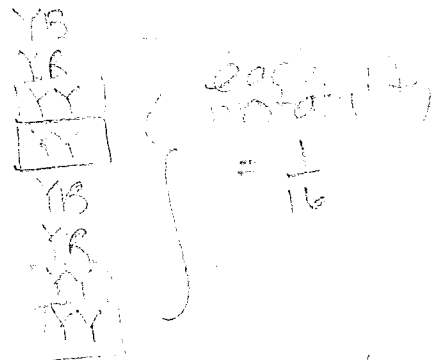
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35.) A bag contains 1 blue marble, 1 red marble and 2 yellow marbles. Dante randomly selects a marble from the bag, notes the color and places it back into the bag. He then randomly selects another marble and notes its color.

a) Draw a tree diagram to represent the possible outcomes and the corresponding probabilities.



4 total



b) What is the probability that the marbles selected are both red or both yellow?

Accelerated 7/8

$$P(RR) + P(YY)$$

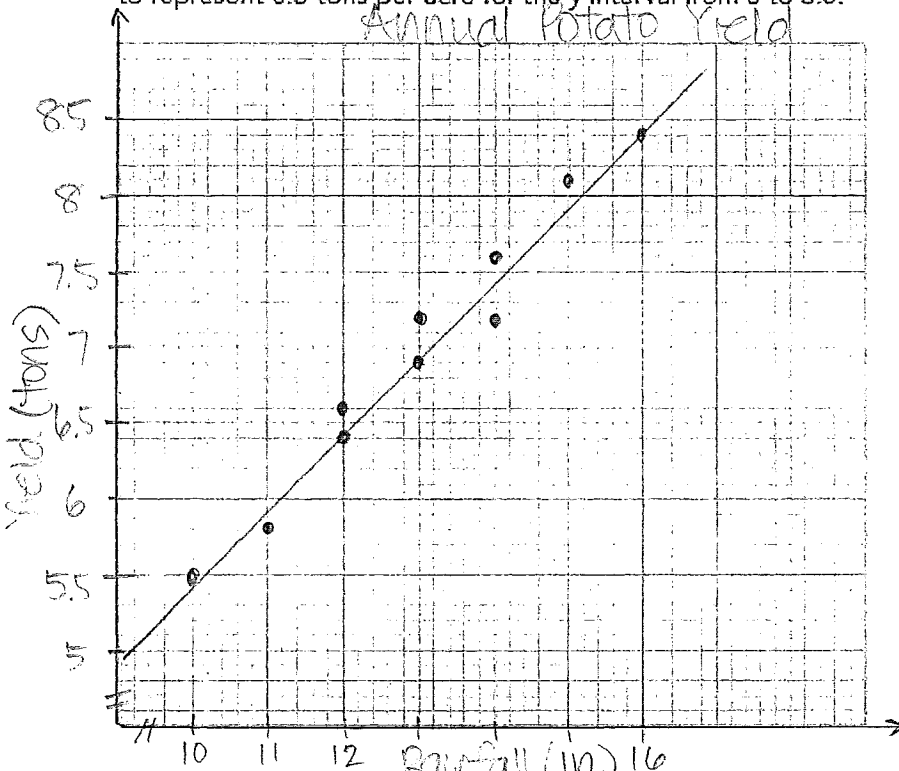
$$\frac{1}{16} + \frac{4}{16} = \frac{5}{16}$$

Final Exam Review

36.) The table shows a farm's annual potato yield, y tons per acre, as it relates to the amount of annual rainfall, x inches per year.

Rainfall (x inches/year)	13	11	12	14	15	14	10	16	13	12
Yield (y tons/acre)	7.2	5.8	6.5	7.6	8.1	7.2	5.5	8.4	6.9	6.4

- a) Construct a scatter plot for the data. Use 1 centimeter on the horizontal axis to represent 1 inch for the x interval from 10 to 16. Use 1 centimeter on the vertical axis to represent 0.5 tons per acre for the y interval from 5 to 8.5.



- b) On the scatter plot in a), draw the line of best fit. Then write the equation of the line of best fit.

$(12, 6.4)$ $(13, 6.9)$
 $m = \frac{6.9 - 6.4}{13 - 12} = \frac{0.5}{1} = 0.5$
 $y = 0.5x + b$
 $6.4 = 0.5(12) + b$
 $6.4 = 6 + b$
 $b = 0.4$
 $y = 0.5x + 0.4$

- c) Estimate the annual potato yield when the annual rainfall is $14\frac{1}{2}$ inches.

$y = 0.5(14.5) + 0.4$
 $y = 7.65 \text{ tons}$

Algebra Review (Chapters 4 and 5)

1.) Write an expression that is equivalent to each of the expressions below:

a.) $-4(7x-3) - 2(3x+12) = -28x+12 - 6x-24 = \boxed{-34x-12}$

b.) $\frac{2}{3}(6x-3) - 5(7-2x) = 4x-2 - 35+10x = \boxed{14x-37}$

2.) Solve and check each equation:

a.) $-4h-8=20-8h$

a) $-4h-8=20-8h$
 $4h=28$
 $h=7$

b.) $-2(m-30)=-6m$

b) $-2m+60=-6m$
 $60=-4m$
 $m=-15$

c.) $x-9=-6x+5$

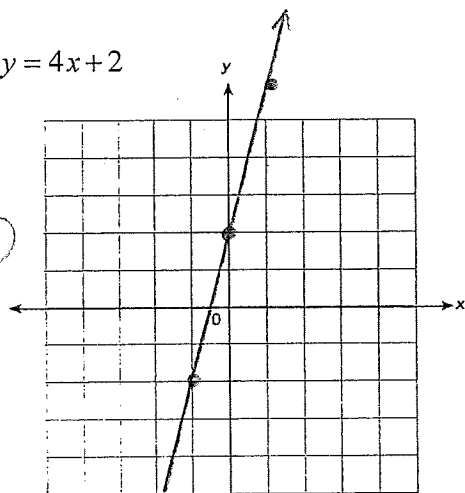
check:
 $-4(7)-8=20-8(7)$
 $-28-8=20-56$
 $-36=-36 \checkmark$

check:
 $-2(-15)+60=-6(-15)$
 $30+60=90$
 $90=90 \checkmark$

3.) List three points that are located on the graph of each equation. Then, plot the points and draw the graph.

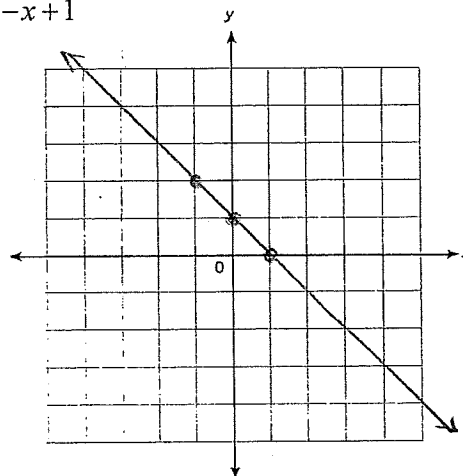
a.) $y=4x+2$

- $(0, 2)$
- $(1, 6)$
- $(-1, -2)$



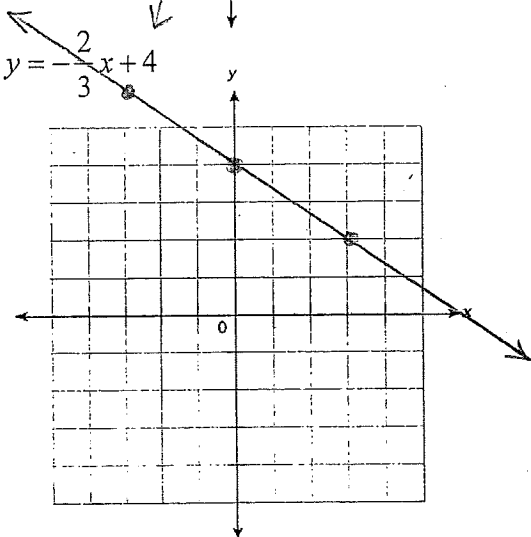
b.) $y=-x+1$

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



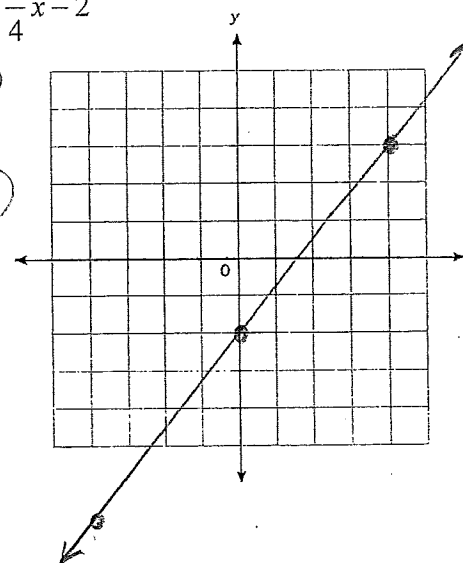
c.) $y=-\frac{2}{3}x+4$

- $(0, 4)$
- $(3, 2)$
- $(-3, 6)$



d.) $y=\frac{5}{4}x-2$

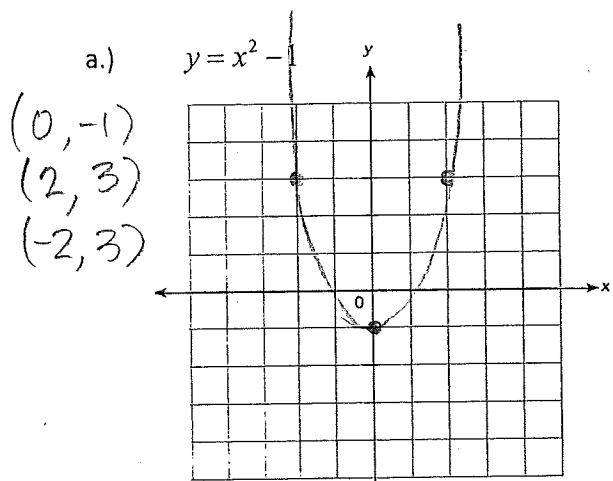
- $(0, -2)$
- $(4, 3)$
- $(-4, -7)$



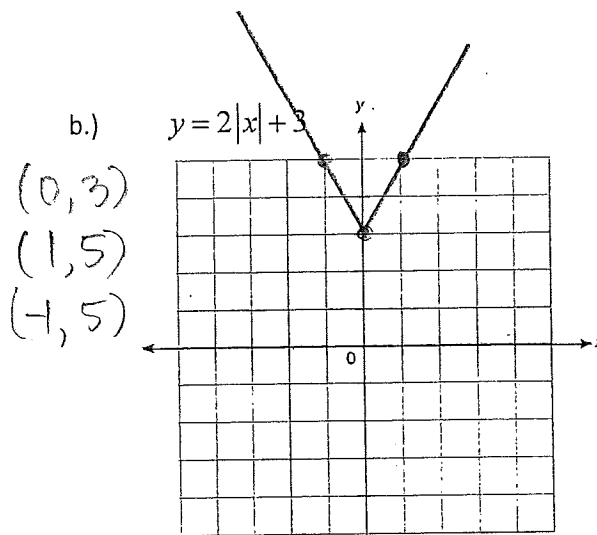
CHECK:
 $(2)-9 = -6(2)+5$
 $-7 = -12+5$
 $-7 = -7 \checkmark$
 $-7x = 14$
 $x = -2$

Algebra Review (Chapters 4 and 5)

4.) Graph each equation by plotting points.



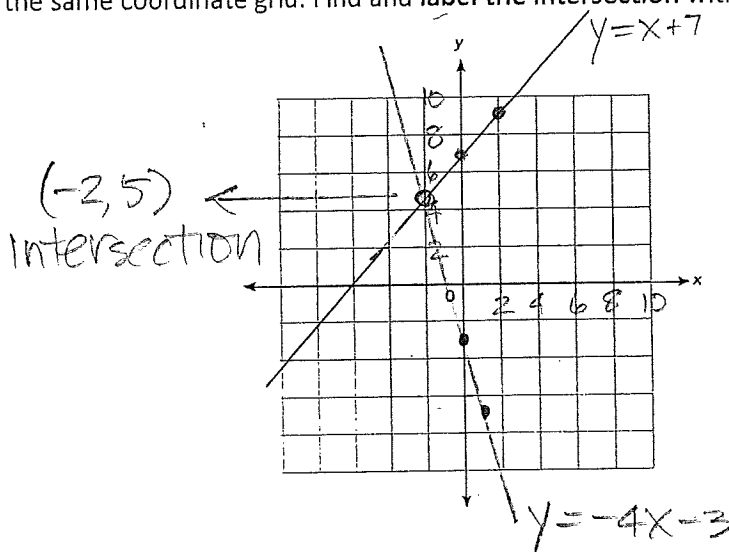
parabola



absolute value fn

5.) Graph the two equations on the same coordinate grid. Find and label the intersection with the coordinates.

$y = x + 7$
 $y = -4x - 3$



6.) Find the slope of the line that passes through each pair of points.

a.) A(1, 8) and D(8, 0) $m = \frac{8-0}{1-8} = \frac{8}{-7} = -\frac{8}{7}$

b.) F(-6, 8) and P(-6, -5) $m = \frac{8+5}{-6+6} = \frac{13}{0} \Rightarrow \text{undefined}$

c.) F(-7, -8) and B(1, -8) $m = \frac{-8+8}{-7-1} = \frac{0}{-8} = 0$

d.) L(-9, 6) and M(-1, -9) $m = \frac{6+9}{-9+1} = \frac{15}{-8}$

7.) Name a pair of points that lies on the graph of each line.

a.) $y = -x + 1$

$(0, 1)$
 $(5, -4)$

b.) $y = -5x + 5$

$(0, 5)$
 $(-3, 20)$

c.) $y = -\frac{4}{5}x - 2$

$(0, -2)$
 $(5, -6)$

Algebra Review (Chapters 4 and 5)

8.) The first three points are collinear (on the same line). Is the fourth point collinear with the first three?

$L(4, 11)$ $M(5, 13)$ $N(3, 9)$ $P(-5, 20)$
 $m = \frac{11-13}{4-5} = \frac{-2}{-1} = 2$ $m = \frac{9-20}{3+5} = \frac{-11}{8}$ **NO**

9.) Find the slope of each line.

a.) $-4x + y = 10$ $y = 4x + 10$ $m = 4$

b.) $2x + 8y = 6$ $8y = -2x + 6$
 $y = -\frac{1}{4}x + \frac{3}{4}$ $m = -\frac{1}{4}$

c.) $3\left(\frac{1}{3}y + 2x = 4\right)$
 $y + 6x = 12$
 $y = -6x + 12$ $m = -6$

10.) Find the x-intercept (the point at which the line crosses the x-axis).

a.) $-x + 2y = 8$ a) $-x + 2(0) = 8$ b) $0 = -5x + 5$
 $-x = 8$ $-x = 8$ $-5 = -5x$
 $x = -8$ $x = 1$
 $(-8, 0)$ $(1, 0)$

11.) Find an equation of the line with the given slope and point.

a.) $(-10, -5)$; slope = $-\frac{5}{3}$ a) $-5 = -\frac{5}{3}(-10) + b$ b) $0 = 2(3) + b$
 $-5 = \frac{50}{3} + b$ $b = -6$

b.) $(3, 0)$; slope = 2 $b = \frac{-5}{3} - \frac{50}{3} = -\frac{65}{3}$ $y = 2x - 6$

c.) $(4, -1)$; slope = $\frac{4}{7}$ $y = -\frac{5}{3}x - \frac{65}{3}$ c) $-1 = \frac{4}{7}(4) + b$
 $-1 = \frac{16}{7} + b$
 $b = \frac{-7}{7} - \frac{16}{7} = -\frac{23}{7}$

12.) Find the equation of the line given two points.

a.) $(-10, 6)$ and $(-8, 7)$ a) $m = \frac{6-7}{-10+8} = \frac{-1}{-2} = \frac{1}{2}$
 $6 = \frac{1}{2}(-10) + b$

b.) $(5, -4)$ and $(3, -5)$ $6 = -5 + b$
 $b = 11$

c.) $(1, 2)$ and $(-6, -8)$ c) $m = \frac{2+8}{1+6} = \frac{10}{7}$

$y = \frac{1}{2}x + 11$

$y = \frac{4}{7}x - \frac{23}{7}$

$2 = \frac{10}{7}(1) + b$

$2 = \frac{10}{7} + b$
 $b = \frac{14}{7} - \frac{10}{7} = \frac{4}{7}$

$y = \frac{10}{7}x + \frac{4}{7}$

b) $m = \frac{-4+5}{5-3} = \frac{1}{2}$

$-4 = \frac{1}{2}(5) + b$

$-\frac{4}{2} - \frac{5}{2} = b$
 $b = -\frac{13}{2}$
 $y = \frac{1}{2}x - \frac{13}{2}$

Algebra Review (Chapters 4 and 5)

8.) The first three points are collinear (on the same line). Is the fourth point collinear with the first three?

$L(4, 11)$ $M(5, 13)$ $N(3, 9)$ $P(-5, 20)$
 $m = \frac{11-13}{4-5} = \frac{-2}{-1} = 2$ $m = \frac{9-20}{3+5} = \frac{-11}{8}$ **NO**

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 $y = -\frac{1}{4}x + \frac{3}{4}$ $m = -\frac{1}{4}$

c.) $3\left(\frac{1}{3}y + 2x = 4\right)$
 $y + 6x = 12$
 $y = -6x + 12$ $m = -6$

$(x, 0)$ 10.) Find the x-intercept (the point at which the line crosses the x-axis).

a.) $-x + 2y = 8$ a) $-x + 2(0) = 8$ b) $0 = -5x + 5$
 $-x = 8$ $-5 = -5x$
 $x = -8$ $x = 1$
 $(-8, 0)$ $(1, 0)$

11.) Find an equation of the line with the given slope and point.

a.) $(-10, -5); \text{ slope} = -\frac{5}{3}$ a) $-5 = -\frac{5}{3}(-10) + b$
 $-5 = \frac{50}{3} + b$
 $b = -\frac{5}{3} - \frac{50}{3} = -\frac{55}{3}$
 $y = -\frac{5}{3}x - \frac{55}{3}$

b.) $(3, 0); \text{ slope} = 2$ b) $0 = 2(3) + b$
 $b = -6$
 $y = 2x - 6$

c.) $(4, -1); \text{ slope} = \frac{4}{7}$ c) $-1 = \frac{4}{7}(4) + b$
 $-1 = \frac{16}{7} + b$
 $b = -\frac{7}{7} - \frac{16}{7} = -\frac{23}{7}$
 $y = \frac{4}{7}x - \frac{23}{7}$

12.) Find the equation of the line given two points.

a.) $(-10, 6)$ and $(-8, 7)$ a) $m = \frac{6-7}{-10+8} = \frac{-1}{-2} = \frac{1}{2}$
 $6 = \frac{1}{2}(-10) + b$
 $6 = -5 + b$
 $b = 11$
 $y = \frac{1}{2}x + 11$

b.) $(5, -4)$ and $(3, -5)$ b) $m = \frac{-4+5}{5-3} = \frac{1}{2}$
 $-4 = \frac{1}{2}(5) + b$
 $-\frac{8}{2} - \frac{5}{2} = b$
 $b = -\frac{13}{2}$
 $y = \frac{1}{2}x - \frac{13}{2}$

c.) $(1, 2)$ and $(-6, -8)$ c) $m = \frac{2+8}{1+6} = \frac{10}{7}$
 $2 = \frac{10}{7}(1) + b$
 $b = \frac{14}{7} - \frac{10}{7} = \frac{4}{7}$
 $y = \frac{10}{7}x + \frac{4}{7}$