Unit 6 Final Exam Review

1. Use a model to solve each equation. Verify the solution.
   a) $7 + 2x = 1$ b) $3 = 5c - 2$

a) $7 + 2x = 1$

$x = -3$

Verify:

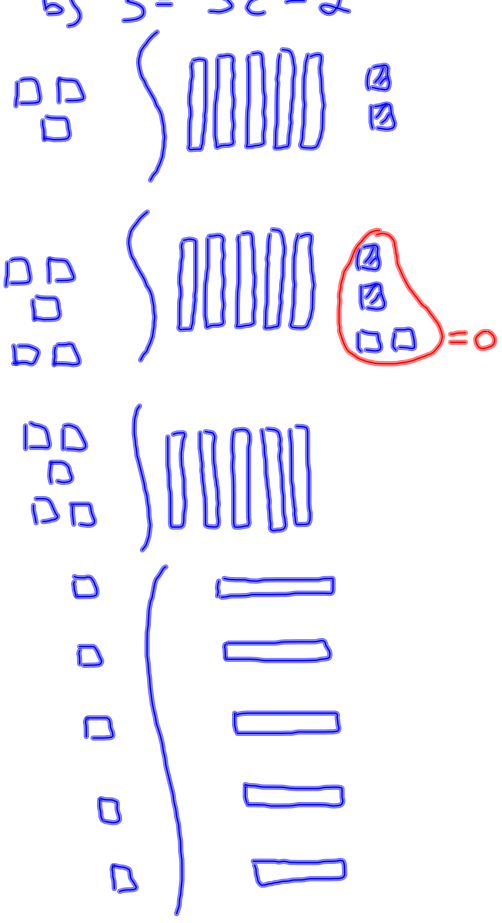
$7 + 2x = 1$

$7 + 2(-3)$

$= 7 + (-6)$

$= 1$

b) $3 = 5c - 2$



$1 = c$

Verify:

$3 = 5c - 2$

$5(1) - 2$

$= 5 - 2$

$= 3$

2. Jack and Diane went to the movies. They each paid the same amount for an admission ticket. Together, they spent $12 on snacks. The total cost of admission and snacks for Jack and Diane was $26. How much was each admission ticket?
   Write an equation that represents this problem. Then solve it.

$2a + 12 = 26$

$-12 \quad -12$

$\frac{2a}{2} = \frac{14}{2}$

$a = 7$

Admission was $7 each.

3. Solve each equation.

a) $4x = 32$ b) $-35 = -5p$ c) $-8a + 11 = 27$ d) $6x - 7 = -19$ e) $\frac{n}{3} - 2 = 10$

f) $6f - 15 = -45$ g) $15 = 10 + 2b$ h) $\frac{t}{4} = 7$ i) $\frac{f}{-6} = 10$ j) $-17 + \frac{n}{-3} = 9$

a) $\frac{4x}{4} = \frac{32}{4}$

$x = 8$

b) $\frac{-35}{-5} = \frac{-5p}{-5}$

$7 = p$

c) $-8a + 11 = 27$

$-11 \quad -11$

$\frac{-8a}{-8} = \frac{16}{-8}$

$a = -2$

d) $6x - 7 = -19$

$+7 \quad +7$

$\frac{6x}{6} = \frac{-12}{6}$

$x = -2$

e) $\frac{n}{3} - 2 = 10$

$+2 \quad +2$

$3 \times \frac{n}{3} = 12 \times 3$

$n = 36$

f) $6f - 15 = -45$

$+15 \quad +15$

$\frac{6f}{6} = \frac{-30}{6}$

$f = -5$

g) $15 = 10 + 2b$

$-10 \quad -10$

$\frac{5}{2} = \frac{2b}{2}$

$\frac{5}{2} = b$

h) $4 \times \frac{t}{4} = 7 \times 4$

$t = 28$

i) $-6 \times \frac{f}{-6} = 10 \times -6$

$f = -60$

j) $-17 + \frac{n}{-3} = 9$

$+17 \quad +17$

$-3 \times \frac{n}{-3} = 26 \times -3$

$n = -78$

4. Write an equation you can use to answer each question. Solve the equation. Verify the solution.

a) Five more than two times a number is 17. What is the number?

b) Six less than five times a number is 29. What is the number?

a) $2n + 5 = 17$

$-5 \quad -5$

$\frac{2n}{2} = \frac{12}{2}$

$n = 6$

Verify:

$2n + 5 = 17$

$2(6) + 5$

$= 12 + 5$

$= 17$

b) $5n - 6 = 29$

$+6 \quad +6$

$\frac{5n}{5} = \frac{35}{5}$

$n = 7$

Verify:

$5n - 6 = 29$

$5(7) - 6$

$= 35 - 6$

$= 29$

5. The Grade 8 students had a graduation dinner. They paid a flat rate of $125 for the use of the hall, plus $13 for each student who attended. The total cost of the dinner was $944. How many students attended the dinner?

$13n + 125 = 944$

$-125 \quad -125$

$\frac{13n}{13} = \frac{819}{13}$

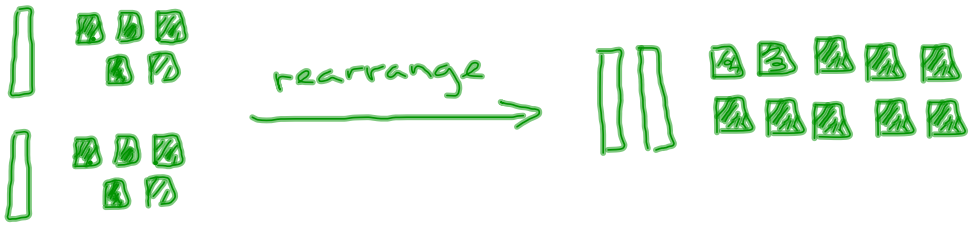
$n = 63$

63 students attended the dinner.

6. Draw algebra tiles to show that $2(n - 5)$ and $2n - 10$ are equivalent.

$2(n-5)$

2 of the $n-5$



$= 2n - 10$

7. Expand.

a) $3(-x + 8)$ **b)** $-4(6 - e)$ **c)** $-3(11y + 7)$ **d)** $7(5n - 4)$ **e)** $-9(-4 - 7c + 10)$

a) $3(-x+8)$

$= -3x + 24$

b) $-4(6-e)$

$-24 + 4e$

c) $-3(11y+7)$

$= -33y - 21$

d) $7(5n-4)$

$= 35n - 28$

e) $-9(-4-7c+10)$

$= 36 + 63c - 90$

$= 63c - 54$

8. Lottery tickets are sold by a local charity to raise money for cancer research. Each ticket costs $100. Some people pay with a $100 bill and some pay with a $100 cheque. Write two expressions you can use to calculate the total amount of money collected. Let b represent the number of $100 bills received. Let c represent the number of $100 cheques received.

$100b$ ↑ $ in bills $100c$ ↑ $ in cheques.

① $100b + 100c$

② $100(b+c)$

9. Solve each equation using the distributive property.

a) $5(a+2) = -5$

$5a + 10 = -5$

$-10 \quad -10$

$\frac{5a}{5} = \frac{-15}{5}$

$a = -3$

b) $4(p-6) = -4$

$4p - 24 = -4$

$+24 \quad +24$

$\frac{4p}{4} = \frac{20}{4}$

$p = 5$

c) $-5(q-11) = 70$

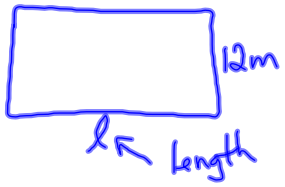
$-5q + 55 = 70$

$-55 \quad -55$

$\frac{-5q}{-5} = \frac{15}{-5}$

$q = -3$

10. Scott bought 54 m of fencing to enclose a rectangular plot of land. The width of the rectangular plot is 12 m. Assume Scott uses all the fencing. What is the length of the rectangular plot of land? Choose a variable to represent the length. Write an equation, ~~using the distributive property,~~ and solve it.



$2(l+12) = 54$

$2l + 24 = 54$

$-24 \quad -24$

$\frac{2l}{2} = \frac{30}{2}$

$l = 15$

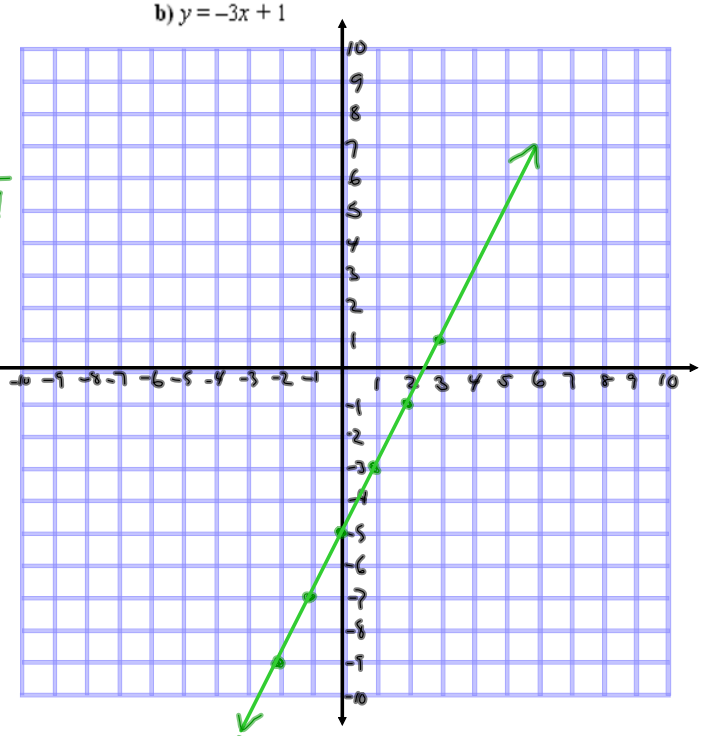
The length of the plot of land is 15m.

11. Complete a table of values and then graph the equation.

a) $y = 2x - 5$ **b)** $y = -3x + 1$

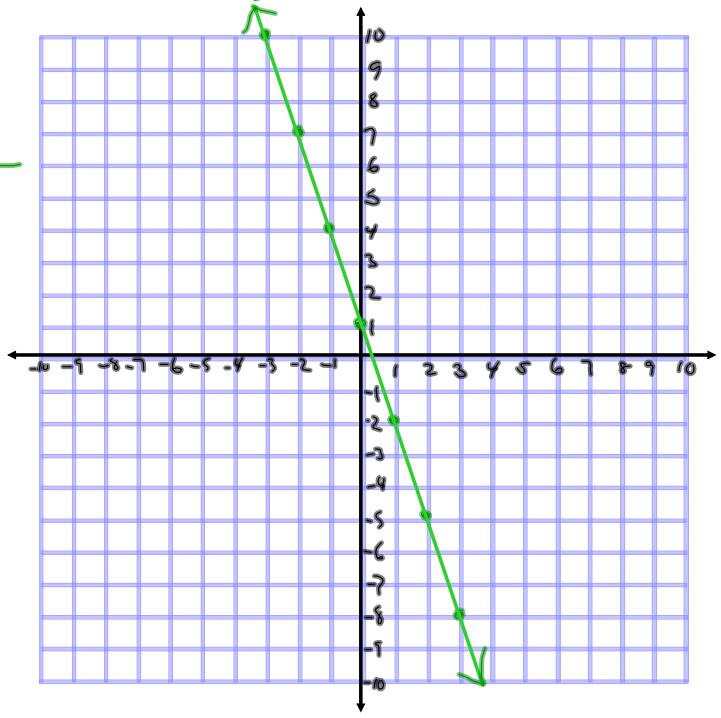
a) $y = 2x - 5$

x	y
-3	-11
-2	-9
-1	-7
0	-5
1	-3
2	-1
3	1



b) $y = -3x + 1$

x	y
-3	10
-2	7
-1	4
0	1
1	-2
2	-5
3	-8



12. These ordered pairs are in the same linear relation. (–3, –11), (–2, –9), (–1,), (0, –5), (, –3), (2,), (3,)
Find the missing numbers in the ordered pairs. Describe the strategy you used.

Using a table of values, since the x values are increasing by 1 and it is a linear relation, the y values should also be increasing by a constant amount.

x	-3	-2	-1	0	1	2	3
y	-11	-9	-7	-5	-3	-1	1

+1 +1 +1 +1 +1 +1

+2 +2 +2 +2 +2 +2

13. The cost of admission to a fair is \$10, plus \$3 per ride. An equation for this relation is $C = 10 + 3r$, where r represents the number of rides a person goes on, and C represents the total cost of admission and rides.

a) Make a table of values for the relation.

b) Graph the relation.

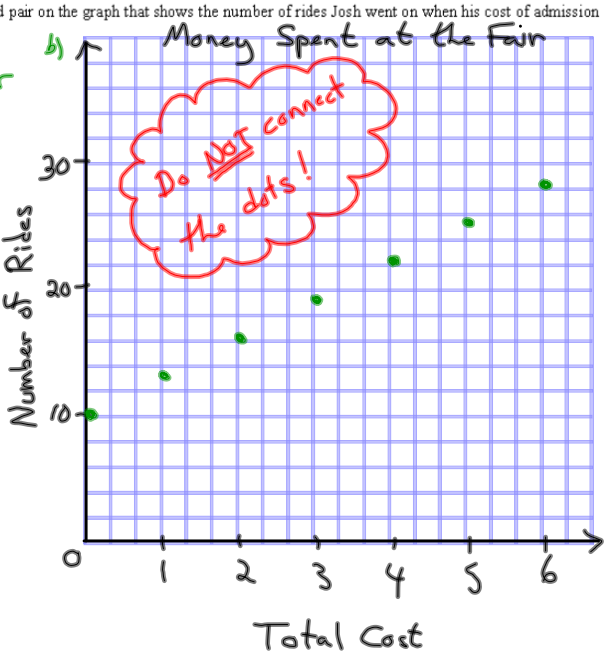
c) Describe the relationship between the variables in the graph.

d) Find the ordered pair on the graph that shows the number of rides Josh went on when his cost of admission and rides was \$22.

a) $C = 10 + 3r$

r	C
0	10
1	13
2	16
3	19
4	22
5	25

b)



c) As the number of rides increase by one, the Total Cost increases by \$3. This creates a linear relation.

d) If $C = 22$. In this case we could use the equation, the graph, or the table of values to get the number of rides. BUT, most times we should use the equation!!

$$C = 10 + 3r$$

$$22 = 10 + 3r$$

$$-10 \quad -10$$

$$\frac{12}{3} = \frac{3r}{3}$$

$$4 = r$$

Josh went on 4 rides.