

Grade 8 Math: Final Exam Review

Unit 6: Linear Equations and Graphing

Lesson 6.1: Solving Equations Using Models

1. Use a model to solve each equation.
Verify the solution.
 - a) $7x = 56$
 - b) $45 = 9x$
 - c) $-x = 4$
 - d) $-9 = 3x$
2. Use a model to solve each equation.
Verify the solution.
 - a) $5x + 4 = 44$
 - b) $7 + 2x = 1$
 - c) $30 = 4x - 6$
 - d) $-2x + 8 = 0$
3. Five less than six times a number is 13.
Let n represent the number.
 - a) Write an equation you can use to solve for n .
 - b) Use a model to solve the equation.
What is the number?
 - c) Verify the solution.
4. 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?
 - a) Choose a variable.
Write an equation you could use to solve this problem.
 - b) Use a model to solve the equation.
 - c) Verify the solution.
5. Use a model to solve each equation.
Verify the solution.
 - a) $4x + 3 = 23$
 - b) $-4x + 3 = 23$
 - c) $4x - 3 = -23$
 - d) $-4x - 3 = -23$
 - e) $3x - 4 = 23$
 - f) $-3x - 4 = 23$

Grade 8 Math: Final Exam Review

Unit 6: Linear Equations and Graphing

Lesson 6.2: Solving Equations Using Algebra

- Solve each equation. Verify the solution.
 - $4x = 32$
 - $-35 = -5x$
 - $-48 = 8x$
 - $9x = 54$
- Solve each equation. Verify the solution.
 - $-8a + 11 = 27$
 - $12b + 21 = 93$
 - $-42 = 5c - 27$
 - $6f - 15 = -45$
- Solve each equation. Verify the solution.
 - $2x - 7 = 9$
 - $-4x + 6 = -14$
 - $6x - 7 = -19$
 - $-7x - 8 = 13$
- Solve each equation. Verify the solution.
 - $2a + 3 = 4$
 - $15 = 10 + 2b$
 - $3 = 5c - 6$
 - $9f - 7 = 1$
- Write an equation you can use to answer each question. Solve the equation. Verify the solution.
 - Five more than two times a number is 17.
What is the number?
 - Six less than five times a number is 29.
What is the number?
- 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?
 - Write an equation you could use to solve the problem.
 - Solve the equation. Verify the solution.
- Use this information:
Ice rental: \$150 Skate rental: \$3
 - Write a problem that can be solved using an equation.
 - Write the equation, then solve the problem.

Grade 8 Math: Final Exam Review

Unit 6: Linear Equations and Graphing

Lesson 6.3: Solving Equations Involving Fractions

1. Solve each equation. Verify the solution.

a) $\frac{t}{4} = 7$

b) $\frac{a}{3} = 9$

c) $\frac{b}{7} = 11$

d) $\frac{c}{6} = 12$

2. Solve each equation. Verify the solution.

a) $\frac{d}{5} = -8$

b) $\frac{f}{-6} = 10$

c) $\frac{k}{-2} = -11$

d) $\frac{g}{3} = -12$

3. One-quarter of the chicken pieces in the dish are wings. There are 7 wings. How many chicken pieces are in the dish?

a) Write an equation you can use to solve the problem.

b) Solve the equation.

c) Verify the solution.

4. Solve each equation.

Verify the solution.

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

b) $4 - \frac{p}{5} = 13$

c) $\frac{t}{-9} + 8 = -5$

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

5. For each sentence, write an equation.

Solve the equation to find the number.

a) A number divided by -4 is 7 .

b) Add 4 to a number divided by -3 and the sum is -2 .

c) Subtract a number divided by 6 from 1 and the difference is 5 .

6. Check this student's work. Rewrite a correct and complete algebraic solution if necessary.

$$\frac{t}{-6} - 24 = -6$$

$$\frac{t}{-6} - 24 + 24 = -6 + 24$$

$$\frac{t}{-6} = 18$$

$$t = -3$$

Grade 8 Math: Final Exam Review

Unit 6: Linear Equations and Graphing

Lesson 6.4: The Distributive Property

1. Draw a rectangle to show that $7(x + 3)$ and $7x + 21$ are equivalent.
2. Draw algebra tiles to show that $2(n - 5)$ and $2n - 10$ are equivalent.
3. Expand.
 - a) $5(x + 6)$
 - b) $7(5 - e)$
 - c) $3(-x + 8)$
 - d) $-4(6 - e)$
 - e) $8(-2n + 4)$
 - f) $-3(11y + 7)$
 - g) $7(5n - 4)$
 - h) $-4(-11y + 3)$
4. 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.
5. Which pairs of expressions are equivalent? Explain your reasoning.
 - a) $4x + 60$ and $4(x + 15)$
 - b) $c + 4$ and $4 + c$
 - c) $4 + 2b$ and $6b$
 - d) $3(a + 5)$ and $8 + 3a$
6. A school uniform consists of a shirt and a pair of shorts. A shirt costs \$22. A pair of shorts costs \$15.
 - a) Write two different expressions to find the cost of supplying 8 students with uniforms.
 - b) Evaluate each expression. Which expression did you find easier to evaluate? Justify your choice.
7. Expand.
 - a) $2(3 + 4y + 7)$
 - b) $3(9a - 5 - 6)$
 - c) $-9(-4 - 7c + 10)$

Grade 8 Math: Final Exam Review

Unit 6: Linear Equations and Graphing

Lesson 6.5: Solving Equations Involving the Distributive Property

- Solve each equation using the distributive property.
Verify the solution.
a) $5(a + 2) = -5$ b) $4(p - 6) = -4$
c) $10(y + 3) = 10$ d) $7(r - 6) = 7$
- Solve each equation. Verify the solution.
a) $-7(b + 6) = -84$ b) $-5(q - 11) = 70$
c) $-9(d - 3) = -45$ d) $-6(f - 5) = 36$
- At the fair, 5 friends each bought an \$8 meal voucher and one ice-cream voucher. The total cost of the vouchers was \$55.
What was the price of an ice-cream voucher?
a) Choose a variable to represent the price of an ice-cream voucher.
Write an equation to model this problem.
b) Solve the equation using the distributive property.
c) Verify the solution. Explain your thinking in words.
- 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?
a) Choose a variable to represent the length of the rectangular plot of land.
Write an equation to model this problem.
b) Solve the equation using the distributive property.
c) Verify the solution. Explain your thinking in words.
- Heather chose an integer.
She added 9, then multiplied the sum by -4 . The product was -16 .
Which integer did Heather choose?
a) Write an equation you can use to solve the problem.
b) Solve the equation.
c) Verify the solution.
- Solve each equation. Verify the solution.
a) $-7(a + 3) = -14$ b) $-5(7 - r + 11) = 10$
c) $-7(b - 3) = -13$ d) $-6(-3 + t - 5) = 10$

Grade 8 Math: Final Exam Review

Unit 6: Linear Equations and Graphing

Lesson 6.6: Creating a Table of Values

1. Copy and complete each table of values.

a) $y = x + 5$

x	y
1	
2	
3	
4	
5	

b) $y = x - 1$

x	y
1	
2	
3	
4	
5	

c) $y = -2x$

x	y
1	
2	
3	
4	
5	

2. Copy and complete each table of values.

a) $y = 2x - 5$

x	y
-3	
-2	
-1	
0	
1	
2	
3	

b) $y = -3x + 1$

x	y
-3	
-2	
-1	
0	
1	
2	
3	

c) $y = -2x - 5$

x	y
-3	
-2	
-1	
0	
1	
2	
3	

3. The equation of a linear relation is: $y = -3x + 8$

Some ordered pairs in the relation are:

$(-1, 11)$, $(0, 8)$, $(1, \quad)$, $(2, 2)$, $(\quad, -1)$, $(4, \quad)$

Find the missing numbers in the ordered pairs.

4. 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) Use the equation to create a table of values.

b) Harvey went on 13 rides. How much did Harvey spend on admission and rides?

c) Stephanie spent \$31 on admission and rides. How many rides did Stephanie go on?

5. These ordered pairs are in the same linear relation.

$(-3, -11)$, $(-2, -9)$, $(-1, \quad)$, $(0, -5)$, $(\quad, -3)$, $(2, \quad)$, $(3, \quad)$

Find the missing numbers in the ordered pairs. Describe the strategy you used.

Grade 8 Math: Final Exam Review

Unit 6: Linear Equations and Graphing

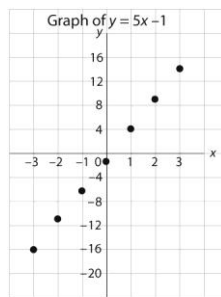
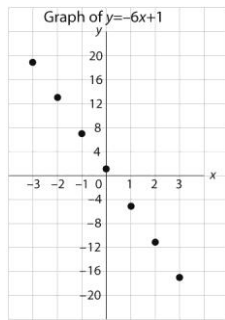
Lesson 6.7: Graphing Linear Relations

1. Each graph below is a graph of a linear relation.

Describe the relationship between the variables in each graph.

a) $y = -6x + 1$

b) $y = 5x - 1$



2. Graph each relation for integer values of x from -3 to 3 .

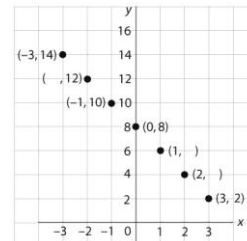
a) $y = x$

b) $y = -x$

c) $y = -2x + 5$

d) $y = 2x + 5$

3. Here is a graph of the linear relation $y = -2x + 8$. Each point on the graph is labelled with an ordered pair. Some numbers in the ordered pairs are missing. Find the missing numbers. Explain how you did this.



4. 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.
- Make a table of values for the relation.
 - Graph the relation.
 - Describe the relationship between the variables in the graph.
 - 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.