Name: _____

Summer Packet Algebra I

MUST SHOW WORK!

*There will be a quiz on this in August 2019

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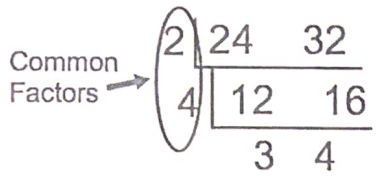
GCF & LCM

Example:

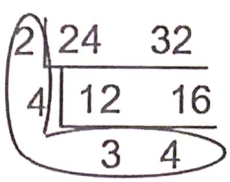
Find the Greatest Common Factor (GCF) and Least Common Multiple (LCM) of 24 and 32.

GCF



GCF= 2 x 4 = 8

LCM



LCM = 2 x 4 x 3 x 4 = 96

Exercises:

Find the GCF.

1. 42, 60
2. $24xy^2, 42xy$
3. $27x^2y^2, 45x^2$
4. 11, 21

Find the LCM

5. 27, 18
6. 15x, $18xy$
7. $9x^2y, 15xy^2$
8. 64, 48

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Fractions
(Addition, Subtraction, Multiplication, and Division)

Miscellaneous

Write the fractions in lowest terms.

1. $\frac{8}{24}$

2. $\frac{18}{24}$

3. $\frac{15x^2y}{20xy}$

4. $\frac{36abc^4}{45a^3bc^2}$

Solve for x.

5. $\frac{16}{48} = \frac{x}{12}$

6. $\frac{12}{42} = \frac{4}{x}$

7. $\frac{20}{32} = \frac{x}{16}$

8. $\frac{6}{9} = \frac{12}{x}$

Write as improper fractions.

9. $2\frac{1}{3}$

10. $-4\frac{6}{7}$

Write as mixed numbers.

11. $-\frac{9}{4}$

12. $\frac{38}{3}$

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Addition and Subtraction

Find each sum or difference. Write your answer in simplest form.

13. $-\frac{2}{3}+\frac{1}{4}$

14. $3\frac{5}{9}+2\frac{1}{6}$

15. $\frac{3}{10}-\frac{4}{5}$

16. $6\frac{7}{10}+\left(-1\frac{1}{5}\right)$

17. $5\frac{4}{11}-2\frac{2}{3}$

18. $2\frac{7}{12}-9\frac{2}{3}$

Multiplication and Division

Find each product or quotient. Write your answer in simplest form.

19. $-\frac{5}{6}\cdot\frac{6}{15}$

20. $-\frac{3}{4}\div\left(-\frac{9}{16}\right)$

21. $2\frac{2}{5}\cdot\left(-3\frac{3}{4}\right)$

22. $-3\frac{3}{4}\div 4\frac{2}{3}$

23. $\frac{2}{9}\cdot\frac{3}{16}\cdot\frac{3}{6}$

24. $6\frac{3}{4}\div 4$

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Working with Integers

Adding and Subtracting:

1st: Rewrite all subtraction as addition then...

- If the integers have the same signs, add their absolute values. The sum will have the same sign of the addends.
- If the integers have different signs, subtract their absolute values. The sum has the sign of the addend with the greater absolute value.

Multiplying and Dividing:

- The product or quotient of two integers having the same sign is positive.
- The product or quotient of two integers having different signs is negative.

Find each sum, difference, product, or quotient.

1. $-13 + 19$
2. $37 + (-13)$
3. $-18 + (-29)$
4. $-27 - 93$
5. $-46 - (-32)$
6. $9 - 83$
7. $-45 \div 9$
8. $-84 \div -12$
9. $\frac{132}{-11}$
10. $8(-17)$
11. $-24 \cdot -6$
12. $-62(8)$

13. There is a 6° drop in temperature over the past hour. If it is 55° now, what was the temperature an hour ago?

14. It is −9° now. The temperature will drop 5° in two hours. What will the temperature be in two hours?

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Order of Operations

When several operations are indicated in a numerical expression, proceed in the following order: work within the parentheses, expand each power, multiply and divide (whichever comes first), and finally, add or subtract (whichever comes first).

PEMDAS ("Please Excuse My Dear Aunt Sally") is an acronym that provides a good way to remember your order of operation.

P: Parentheses
E: Exponents
MD: Multiply or Divide, whichever comes first
AS: Add or Subtract, whichever comes first

Simplify.

1. $2^4 - 3(3^2 - 8)$

2. $(4^2 + 10)4 - 10(5^2 - 20)$

3. $4^2 - 4(5^2 - 32 \div 8 \cdot 4)$

4. $(8 \cdot 5 \div 10 + 2)(2^5 - 8^2 \div 2)$

5. $5^2 - 3[6 + (-2)(20 + (-15))]$

6. $[4^3 + (-10)(30 - 8 \cdot 5)]$

7. $[15 - 3(4^2 - 10) + 25 \div 5 \cdot 15]$

8. $\{10 - 5[20 - 2(3^2 + 1)]\}$

9. $|-32| + 32$

10. $\frac{48-24\div 2^3}{3+2\cdot 6}$

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Solving Multi-Step Equations

Procedure: To solve multi-step equations...

1. Fully simplify both sides of the equation
2. Get all variables to one side of the equation.
3. Use inverse operations to isolate the variable
   undo addition and subtraction first

Ex.

$$2x+3=7$$
$$-3 \quad -3$$
$$\frac{2x}{2} = \frac{4}{2}$$
$$\boxed{x = 2}$$

Ex.

$$2(x + 5) = 3x - 5$$
$$2x + 10 = 3x - 5$$
$$-2x \qquad -2x$$
$$10 = x - 5$$
$$+5 \qquad +5$$
$$\boxed{x = 15}$$

Exercises

Solve and check each equation.

1. $-2x + 7 = 25$

2. $3 - 8x = -141$

3. $15 - 2(w + 5) = 11$

4. $12 - 4r = 6r + 2$

5. $-4(n + 5) = -32$

6. $12 - 2x + 5 = -1$

7. $3 - 2x = 15$

8. $\frac{z}{2} - 7 = 12$

9. $17 + 3x = 4x - 9$

10. $-3(6f - 12) = 36 - 18f$

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Solving Multi-Step Inequalities

Note: Solve a multi-step inequality just like you would solve a multi-step equation. However, if you multiply or divide both sides of an inequality by a negative number, then the inequality sign reverses.

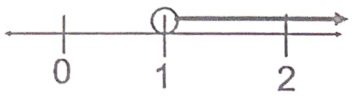
Ex.

$2x + 5 > 7$

$-5 \quad -5$

$\frac{2x}{2} > \frac{2}{2}$

$\boxed{x > 1}$



Ex.

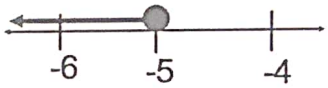
$10 \leq -2(x - 4)$

$10 \leq -2x + 8$

$-8 \qquad -8$

$\frac{10}{-2} \leq \frac{-2x}{-2}$

$\boxed{-5 \geq x \text{ or } x \leq -5}$



Exercises

Find and graph the solution set of each inequality.

1. $3x + 8 > 17$

2. $-6y + 3 > 9 - 7y$

3. $2v + 7 \geq 11$

4. $7 > 3 + \frac{b}{3}$

5. $\frac{c-2}{3} \leq 4$

6. $4b + 4 < 4(5 - 3b)$

7. $2z - 5 < -21 - 2z$

8. $8b - 10 \geq 6(3 - a)$

9. $3x - 5 > 6x + 13$

1. $7(y + 5) - 10 \leq 2y$

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Linear Functions

Exercises

Tell whether each ordered pair is a solution of the equation.

1. $3x + y = -11, (-4, 1)$

2. $2x - y = 4,\ (3, -2)$

Find the intercepts of the equations graph.

3. $3x - 4y = -12$

4. $y = -2x - 8$

Find the slope through the given points.

5. $(4, 7), (-3, 6)$

6. $(-5, 7), (-5, -14)$

Identify the slope and y-intercept of the line with the given equation.

7. $y = 2x - 12$

8. $2x - 3y = -6$

Write an equation of the line that is parallel to the given line and passes through the given point.

9. $y = -2x - 6,\ (0, -4)$

10. $-2x + 3y = 12,\ (3, 2)$

Graph the equation using any method.

11. $y = 2x - 3$

12. $-2x - 3y = 12$

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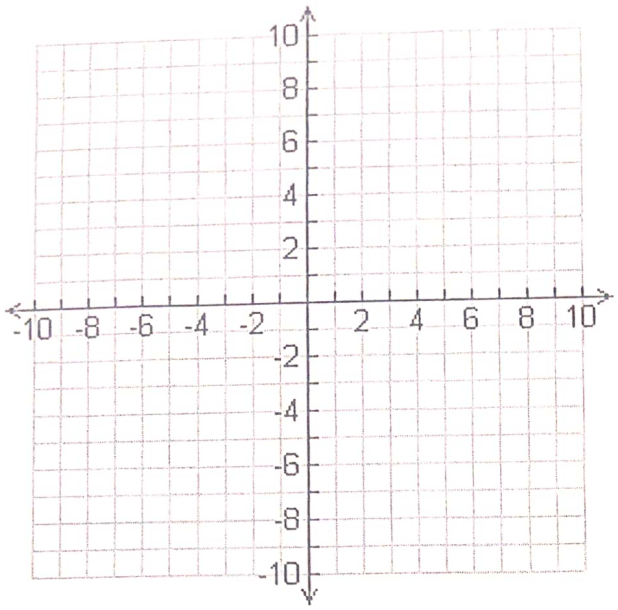

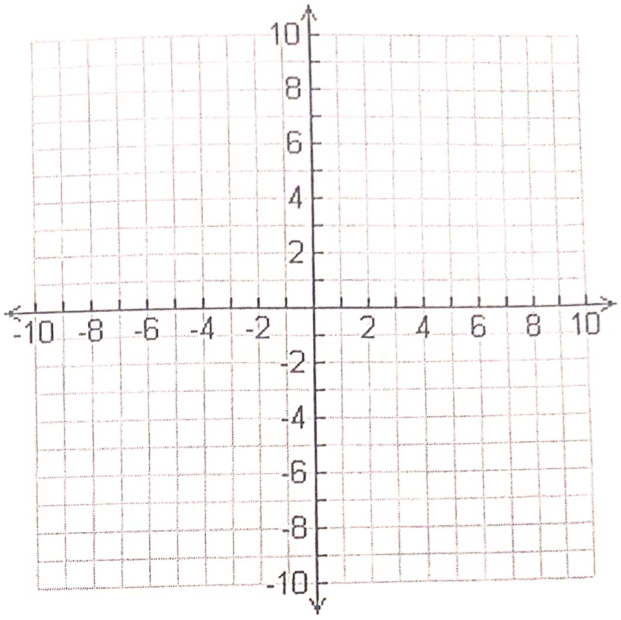

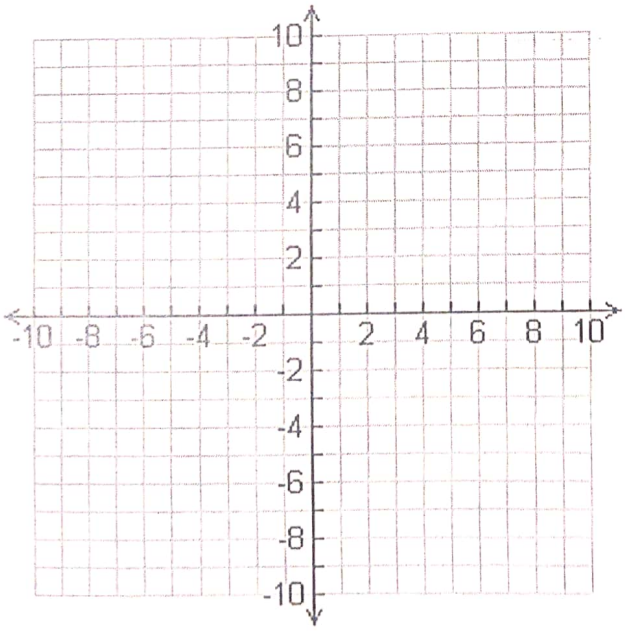

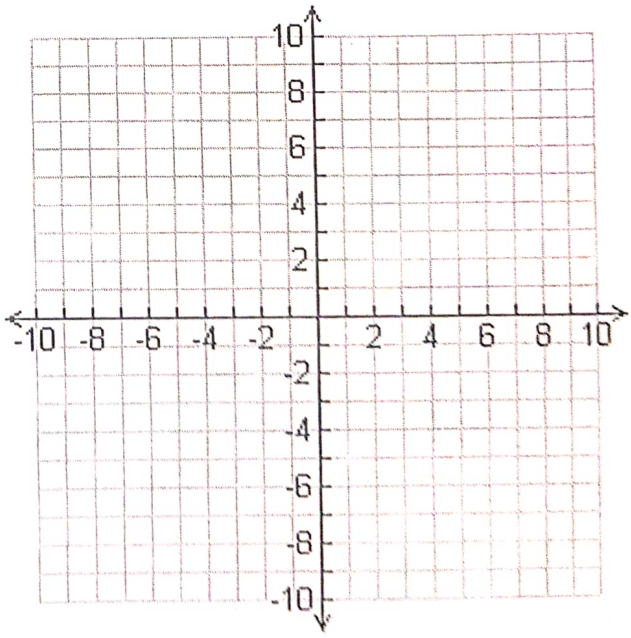

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