

8R  
Unit 14A  
Polynomials

Name: \_\_\_\_\_  
Teacher: \_\_\_\_\_  
Period: \_\_\_\_\_

**Lesson A**  
**Products of Powers and Powers of Powers**

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Vocabulary: Review

$$4x^2$$

- 1) Name the variable \_\_\_\_\_
  - 2) Name the coefficient \_\_\_\_\_
  - 3) Name the exponent \_\_\_\_\_
  - 4) Name the base \_\_\_\_\_
- 

**Part 1: Products of Powers**

**Examples:**

**Rule:**

When you multiply powers with the same base  $\longrightarrow$

1)  $x^2 \cdot x^3$

2)  $3^3 \cdot 3^2$

3)  $y^3 \cdot y$

4)  $(x^2y)(x^3y^3)$

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**If there is a coefficient:**

**Steps:**

1)

2)

5)  $(5x^2)(3x^3)$

6)  $(-6ab^3)(-2a^2b^7)$

7)  $(3ab)(-5a^2bc^3)$

8)  $(2x^{-6}y^5)(-5x^2y^{-3})$

**Try These:**

1)  $(a^5)(a^2)$

2)  $(m^8)(m^4)$

3)  $(-8mp^5)(-m^2p)$

4)  $(a^5)(d^3)$

5)  $(6x^{-2}y^4)(-3x^3y^{-1})$

6)  $(4x^3y^5)(4x^3y^5)$

**Part 2: Powers of Powers**

$(x^2)^3$

Rule:

1)

2)

3)

**Examples:**

1)  $(x^3)^2$

2)  $(2a)^4$

3)  $(-2y^3)^3$

4)  $(4x^4y)^2$

5)  $(-3x^2y)^2$

6)  $(7ab)^2 (a^4b)^3$

\*7)  $(-3ab)^3 (a^{-2}b^4)^2$

8)  $(x^5)^4$

9)  $(a^3)^4$

10)  $(-3x^6)^3$

11)  $(-2xy)^3$

12)  $(2a^{-4}b^5c^3)^2$

13)  $(-p^4q)^5$

14)  $(-8xy)(x^5y)^2(x^7y)$

## Lesson A: Homework

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### Part 1: Simplify

1)  $(p^5)(p^7)$

2)  $(a^6)(a^2)$

3)  $(t^5)(y^2)$

4)  $(p)(p^8)$ 

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5)  $(4b^3)(8b^2)$

6)  $(16a^{10})(a^4)$

7)  $(7m^4)(m^3)$

8)  $(6c^3)(7c^5)$ 

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9)  $(x^2yz^4)^3$

00)  $(-bc^6d^4)^3$

11)  $(-xy^3z^8)^2$

12)  $(-7a^3b^4c^5)^3$ 

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13)  $(-4s^2)(7s)$

14)  $(6b^3)(-8b)$

15)  $(-4m^8)(7m)$

16)  $(-5t^6)(-t)$ 

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17)  $(6a^3b^5)(8a^4b^6)$

18)  $(8a^4b^6)(2a^3b^2)$

19)  $(9m^2g^3)(-5m^5g^7)$ 

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20)  $(-6ab^4)(-9a^4b^3)$

21)  $(-4p^4q^2)(7pq^5)$

22)  $(gh)(gh)$ 

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23)  $(x^4)^3$

24)  $(c^6)^4$

25)  $(6x^3)^2$

26)  $(-3g^2)^3$

Aim: How do we distribute a monomial?

**Lesson B**

Warm Up:

**A. Polynomials**

Monomials –

Binomials –

Trinomials –

Polynomials –

Standard Form -

**B. Distributive Property** –Simplify each expression and express in standard form

1. $12x(12x + 11)$	2. $9x(4x + 2)$
3. $x(9x^2 + 4x + 3)$	4. $8x(2x + 7)$
5. $4x(-8x - 9)$	6. $5x(-6x - 3)$
7. $11x(-5x^3 + 8x^2 + 9x + 8)$	8. $-9x(-3x^2 + 9x + 11)$

9. $-4x(8x - 5)$	10. $-3x(-4x^2 - 10x + 12)$
11. $-2x(11x^3 - 10x^2 + 4x + 6)$	12. $x(-9x^2 + 7x + 4)$
13. $6x(11x + 7y)$	14. $-11xy(2x - 3y)$
15. $9x^2(-7x + 2)$	16. $-7x(5x^2 + 10y^2)$
17. $-10x(-9x - 5)$	18. $-3x(7x + 8y - 5z)$
19. $6x^2(-5x + 4)$	20. $11x^2(7x^2 - 4x)$

**Lesson B: Homework**

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1)  $x^6 \cdot 5x^{-3}$

2)  $5x^{-5} \cdot 3x^9$

3)  $(9x^{-4}y^3)(4x^{-2}y^6)$

4)  $(2x^{-5}y^3)(3x^4y^{-8})$ 

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5)  $-6(2x^2 + 3)$

6)  $x(x^2 - 7x)$

7)  $-x^4(3x^5 - 2x^3)$ 

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8)  $5x^2(4x^3 + 5x^2 + 10x)$

9)  $-a^2(a^5 - 3a^4 + a)$

10)  $-3c^5(7c^3 - c^2)$ 

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11)  $3h(5h^3 - 6h)$

12)  $2x(3x^3 - x^2 - 5)$

13)  $-2n(3n^2 - 3n - 7)$ 

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14)  $w^2(5w^3 + 7w - 3)$

15)  $a^3b^3(a^5 - ab + 2b^4)$ 

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### Multiplying Polynomial Quiz Review

Simplify

1)  $(x^2)(x^4)$

2)  $5y^2(6x^3)$

3)  $-2x^2(6x^6)$

4)  $-6(x^0)$

5)  $(x^3)^2$

6)  $(-2x^5y)^3$

7)  $(-3a)^2$

8)  $(5a^4)^2$

9)  $2x(3x + 6)$

10)  $-5xy(4x^2 + 7y)$

11)  $x^6(4x^2 - 3)$

12)  $3x^2(5x^2 - 3x + 9)$

13)  $x(4x + 7)$

14)  $x(8x - 1)$

15)  $-2x(6x + 3)$

16)  $(x + 2)(x + 3)$

17)  $(4x - 5)(6x - 4)$

18)  $(x - 7)(x + 3)$

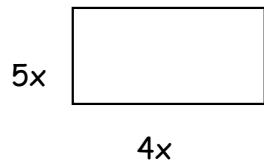
19)  $(x-6)(x + 6)$

20)  $(3x + 8)(x - 2)$

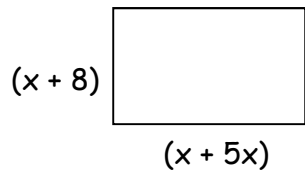
21)  $(x - 5)^2$



22) Express the area of the rectangle in terms of  $x$ .



23) Express the area of the rectangle in simplest terms of  $x$ .



24) Give an example of the following:

Monomial:

Binomial:

Trinomial:

25)  $(x + 7)(x^2 + 6x - 8)$

26) Express  $3x - 4x^2 + 6 - 3x^3$  in standard form.

27) Write a function rule for the table below.

$x$	1	2	3	4
$y$	2	5	8	11

**Aim: How do we divide by a monomial?**

Warm Up: Simplify:

1)  $x^0$

2)  $4x^{-2}$

3)  $x^0y^{-5}$

4)  $-5x^{-8}$

**B. Dividing Monomials**

1)  $\frac{5^8}{5^3}$  \_\_\_\_\_

2)  $\frac{6^3}{6^2}$  \_\_\_\_\_

3)  $2^5 \div 2^3 =$  \_\_\_\_\_

7)  $\frac{x^{10}}{x^{10}} =$  \_\_\_\_\_

8)  $\frac{4^{17}}{4^{16}} =$  \_\_\_\_\_

9)  $\frac{y^{10}}{y^5} =$  \_\_\_\_\_

**What if there are coefficients?**

12)  $\frac{5x^3}{5x^2} =$  \_\_\_\_\_

13)  $\frac{12x^5}{-6x^2} =$  \_\_\_\_\_

14)  $\frac{14x^{11}}{21x^2} =$  \_\_\_\_\_

15)  $\frac{-18x^9}{2x^{14}} =$  \_\_\_\_\_

20)  $\frac{z^{23}}{z^{-7}} =$  \_\_\_\_\_

21)  $\frac{x^3}{x^3} =$  \_\_\_\_\_

21)  $\frac{4x^6}{16y^7} =$  \_\_\_\_\_

23)  $30x^7 \div 5x^4 =$  \_\_\_\_\_

**C. Dividing a Polynomial by a Monomial**

Rule:

1)  $\frac{32m - 20}{4}$

2)  $\frac{6x + 2}{2}$

3) 
$$\frac{20n^4 - 15n^3 + 35n^2}{5n^2}$$

4) 
$$\frac{15x^2 - 3x}{3x}$$

5) 
$$\frac{25x^2y^8 - 40x^{12}y^4}{4x^2y^4}$$

6) 
$$\frac{36x^7 - 48x^5}{12x^4}$$

7) 
$$(22x^8 - 18x^6 + 10x^3) \div 2x^3$$

Multiply

8.  $3x(4x - 5)$

9.  $(x + 6)(x - 8)$

10.  $(2x + 6)(x - 5)$

11. Simplify  $3x^0$

12. Simplify  $(3x)^0$

13. Solve:  $7x + 8 = 5x$

14. What are the coordinates of (5,-3) when reflected with the y-axis?

A) (-5,3) B) (-5,-3) C) (5,-3) D) (3,-5)

15. What is the supplement of 60°?

**Homework – Dividing by a Monomial (2-28 EVEN)**

**Lesson C**

1)  $\frac{5^7}{5^3} = \underline{\hspace{2cm}}$     2)  $\frac{9^5}{9^2} = \underline{\hspace{2cm}}$     3)  $\frac{7^3}{7^9} = \underline{\hspace{2cm}}$     4)  $\frac{x^3y^9}{y^9} = \underline{\hspace{2cm}}$     5)  $\frac{4^6 \cdot 5^2 \cdot (-1)^7}{4^5 \cdot (-1)^4} = \underline{\hspace{2cm}}$

6)  $\frac{9a^6}{3a^2} = \underline{\hspace{2cm}}$     7)  $\frac{10x^5y^{12}}{20xy^8} = \underline{\hspace{2cm}}$     8)  $\frac{4x^{50}}{2y^{25}} = \underline{\hspace{2cm}}$     9)  $\frac{5x^4y}{x^{14}y^8} = \underline{\hspace{2cm}}$

10)  $-40a^2 \div 5a^2$     11)  $(45m - 27) \div 9$     12)  $(30n^3 - 24n^2 + 18n) \div 6n$

13)  $\frac{9x^3 - 12x^5 + 3x}{3x}$     14)  $\frac{6x^6 + 18x^4 - 6x^3}{6x^3}$     15)  $(7x^5 - 42x^3 + 28x^2) \div 14x^{-2}$

16) The area of a rectangle is  $(9x^3 + 12x^2 + 36x)$ . if the width is determined to be  $3x$ , what is the length?

17) If a square has a side the measures  $(2x - y)$  what is its area?

18)  $(5x^4 + 25x^3 - 10x^2) \div 5x$     19)  $-27x^9 \div -3x$     20)  $(30n^3 - 24n^2 + 18n) \div 3n$

21)  $\frac{x^6}{x^2}$     22)  $x^4 \div x^{-3}$     23)  $\frac{15x^9}{5x^3}$

**24. Reasoning** Demonstrate why  $\frac{15x-5}{5} \neq 3x-5$ . Show your work.

25)  $24x^{10} \div 8x^{-2}$     26)  $\frac{-18x^2}{6x^{-5}}$     27)  $\frac{30x + 20}{10}$     28)  $\frac{4x^9 - 8x^8 - 2x^7}{2x^3}$

**Lesson D**  
**Adding Polynomials**

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**Standard Form:** \_\_\_\_\_

1) Write  $2 + 5x^2 - 3x$  in standard form.

2) Write  $-5x + 4x^3 + 7 - 2x^2$  in standard form.

3) Write  $-6x + 8x^2 - 7$  in standard form.

4) Write  $-5 + 6x^2 + 10x - 9x^3$  in standard form.

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**Adding Monomials**

1) Simplify and express answer in standard form:  $-3m + 7m^2 + 2m - m^2$

2) Simplify and express answer in standard form:  $-10m^2 + 6 - m + 6m^2 + 7m + 5$

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**Simplify and express answer in standard form.**

3)  $-5x + x^2 + 3x - 4x^2$

4)  $2x^2 - 7x + 6 + 5x^2 - 3x - 2$

5)  $9x^2 + 4x - 8 - 3x^2 - 5x + 8$

6) A pizza shop owner is monitoring the amount of cheese he uses each week. The polynomials below model the pounds of cheese ordered in the past, where  $p$  represents pounds.

Mozzarella:  $3p^3 - 6p^2 + 14p + 125$

Cheddar:  $12.5p^2 + 18p + 75$

Write a polynomial that models the total number of pounds of cheese that were ordered.

### Adding Polynomials

1)  $(3x^2 - 5x + 4) + (7x^2 - 6x + 9)$

2)  $(x^2 + 8x - 5) + (3x^2 - 4x - 7)$

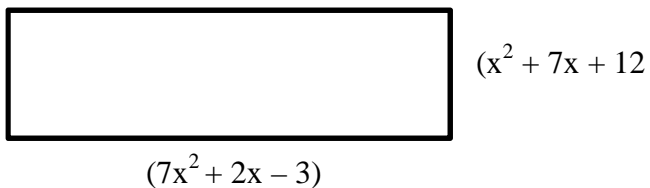
5)  $(4x^2 + 5x - 9) + (5x^2 - 6x - 3)$

6)  $(2x^2 - 4x + 1) + (3x^2 + 8x - 9)$

7)  $(4x^2 + 5x - 9) + (-4x^2 - 9x + 3)$

8)  $(x^2 - 4x + 10) + (x^2 - 8x - 9)$

9) Express the perimeter of the rectangle in simplest terms of  $x$



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**Lesson D: Homework Simplify and answer in standard form.**

1)  $4x^2 + 3 - 6x^2 + 9$

2)  $3x^2 - 9x + 2 + 7x^2 - x - 8$

3)  $x^2 + 2x - 7 - 4x^2 - 5x + 11$

---

4)  $(4a^2 - 8a - 5) + (a^2 - 2a - 12)$

5)  $(-6y^2 + 3y - 1) + (-9y^2 - 5y + 2)$

6)  $(7x^2 - 2x - 6) + (x^2 + 2x + 9)$

---

7)  $(-3y^2 + 5y - 8) + (-3y^2 + 1)$

8)  $(-y^2 - 4y) + (10y^2 - 2y + 6)$

9)  $(7x^2 - 2x - 6) + (-7x^2 + 2x + 6)$

10) Find the LENGTH of a rectangle if the **area is  $15x^4 - 10x^3 + 25x^2$**  and the **width is  $5x^2$** .

11) The stop sign at the corner of Division and Waverly measures  $(n + 2)$  on each side. What is the perimeter of the octagon?

## Lesson E - Subtracting Polynomial

Warm Up:

1) Simplify:  $-(5x^2 - 9x + 4)$

2)  $-(-3x^2 + 2x - 6)$

### A. Subtracting Polynomials

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1)  $(x^3 + 5x^2 - 7x) - (-4x^3 + 6x^2 - 2x)$

2)  $(5x^3 + 2x^2 - x) - (3x^3 + 4x^2 - x)$

3)  $(4x^2 + 5x - 9) - (5x^2 - 6x - 3)$

4)  $(2x^2 - 4x + 1) - (3x^2 + 8x - 9)$

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5) Subtract  $(4x^2 + 9x)$  from  $(2x^2 + 3x)$

6) Subtract  $(3x^2 - 4x)$  from  $(x^2 + 6x)$

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7) What is  $(x^2 + 3x)$  subtracted from  $(3x^2 - 4x)$ ?

8) If  $A = 3x^2 + 5x - 6$  and  $B = -2x^2 - 6x + 7$ , then  $A - B$  equals

1)  $-5x^2 - 11x + 13$

2)  $5x^2 + 11x - 13$

3)  $-5x^2 - x + 1$

4)  $5x^2 - x + 1$



9 When  $5x + 4y$  is subtracted from  $5x - 4y$ , the difference is

- 1) 0
- 2)  $10x$
- 3)  $8y$
- 4)  $-8y$

10 When  $3x^2 - 8x$  is subtracted from  $2x^2 + 3x$ , the difference is

- 1)  $-x^2 + 11x$
- 2)  $x^2 - 11x$
- 3)  $-x^2 - 5x$
- 4)  $x^2 - 5x$

11) Which expression is equivalent to  $2(3g - 4) - (8g + 3)$ ?

- 1)  $-2g - 1$
- 2)  $-2g - 5$
- 3)  $-2g - 7$
- 4)  $-2g - 11$

12) Which expression is equivalent to  $-3x(x - 4) - 2x(x + 3)$ ?

- 1)  $-x^2 - 1$
- 2)  $-x^2 + 18x$
- 3)  $-5x^2 - 6x$
- 4)  $-5x^2 + 6x$

## Lesson E: Homework

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1)  $(6x^2 + 2x + 9) + (x^2 - 4x - 12)$

2)  $(x^2 - 5x + 13) - (4x^2 - 5x - 7)$

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3)  $(15x^2 + 4x - 3) - (x^2 - 4x - 3)$

4)  $(7x^2 + x - 4) + (11x^2 - 8x + 5)$

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5)  $(10x^2 - x + 1) - (6x^2 + 14x - 4)$

6)  $(x^2 + 5x - 9) + (3x^2 - 6x + 9)$

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7) What is  $(5x^2 - 4x)$  subtracted from  $(-3x^2 + 8x)$ ?

8) Subtract  $(x^2 + 2x)$  from  $(9x^2 + x)$

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9) The expression  $3(x^2 - 1) - (x^2 - 7x + 10)$  is equivalent to

1)  $2x^2 - 7x + 7$

2)  $2x^2 + 7x - 13$

3)  $2x^2 - 7x + 9$

4)  $2x^2 + 7x - 11$

Unit 14A Review

**Simplify. Express as a positive exponent.**

1)  $(-4a^5)^3$

2)  $(-8x^2)(-4x)$

3)  $(x^6yz^9)(xy^8z)$

4)  $5x(3x^2 + 4x - 8)$

5)  $-3x^3(6x - 8y)$

6)  $3xy(4x - 7y)$

7)  $(x + 5)(x + 3)$

8)  $(x - 2)(x + 9)$

9)  $(3x - 2)(3x + 4)$

10)  $(5x)^0$

11)  $5x^0$

12)  $\frac{21x^4}{3x^5}$

13)  $\frac{x^4}{x^7}$

14)  $\frac{2x^2y^5}{8xy^8}$

15)  $3x^{-5}(-2x^3)$

16)  $\frac{8m^2 + 4m}{4m}$

17)  $\frac{25x^3 - 10x^2 + 5x}{5x}$

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**Multiple Choice Review:**

18) Expressed in decimal notation,  $4.726 \times 10^{-3}$  is

- A) 0.004726    B) 0.04726    C) 472.6    D) 4,726

19) The expression  $\sqrt{93}$  is a number between

- A) 3 and 9    B) 8 and 9    C) 9 and 10    D) 46 and 47

20) If  $\triangle GHI \cong \triangle JKL$ , then  $\angle L$  is congruent to which angle?

- A)  $\angle G$     B)  $\angle H$     C)  $\angle I$

21) What is the slope of the graph of the equation  $y = 2x - \frac{3}{4}$ ?

- A)  $\frac{1}{2}$     B) 2    C)  $\frac{3}{4}$     D)  $2x$

22) Solve the following system of equations for  $x$ :

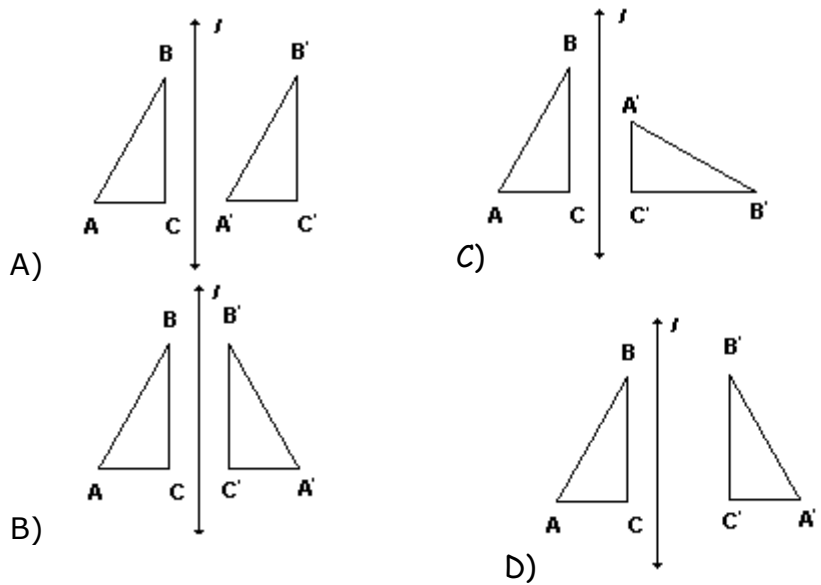
$$\begin{aligned} 4x + y &= 11 \\ x + y &= 2 \end{aligned}$$

- A) -1                  B) 2                  C) 3                  D) 27

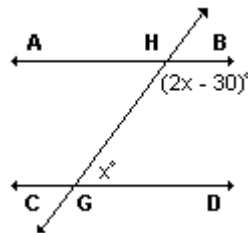
23) Which is a rational number?

- A)  $\sqrt{7}$                   B)  $\sqrt{18}$                   C)  $-\sqrt{49}$                   D)  $\sqrt{20}$

24) In which figure is  $\triangle A'B'C'$  a reflection of  $\triangle ABC$  in line  $l$ ?



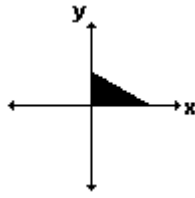
25) In the diagram, transversal  $\overleftrightarrow{GH}$  intersects parallel lines  $\overleftrightarrow{AB}$  and  $\overleftrightarrow{CD}$ ,  $m\angle DGH = x$ , and  $m\angle BHG = 2x - 30$ .



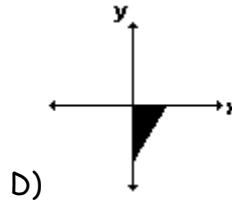
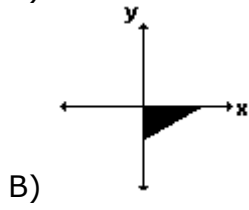
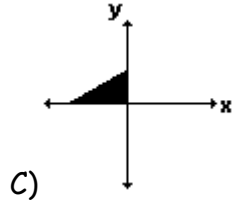
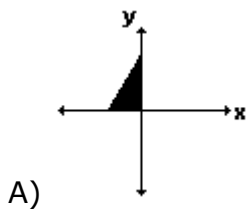
Find the value of  $x$ .

- A) 30                  B) 50                  C) 70                  D) 110

26) The diagram below shows a right triangle.



If the triangle is rotated  $90^\circ$  counterclockwise about the origin, what will the image be?



27) Solve for  $x$ :  $6(x - 2) - 4x = 16$

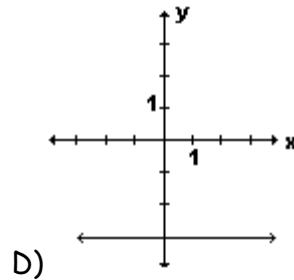
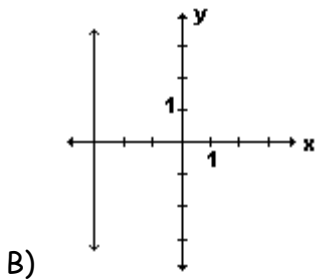
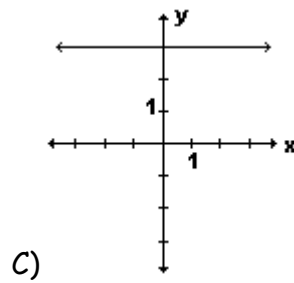
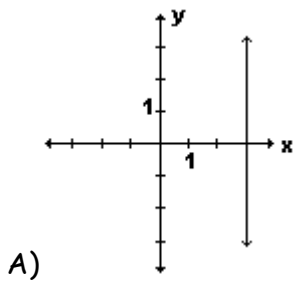
A) 2

B) 7

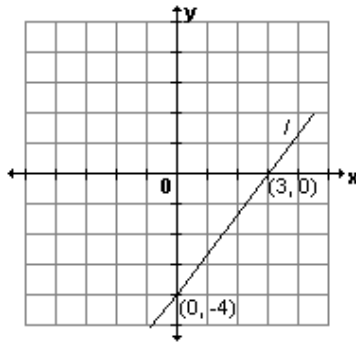
C) 12

D) 14

28) Which graph represents the equation  $x = -3$ ?



29) What is the slope of line  $l$  shown in the accompanying diagram?



- A)  $\frac{4}{3}$       B)  $\frac{3}{4}$       C)  $-\frac{3}{4}$       D)  $-\frac{4}{3}$

30) A translation moves  $A(-3, 2)$  to  $A'(0, 0)$ . Find  $B'$ , the image of  $B(5, 4)$  under the same translation.

- A)  $B'(0, 0)$       B)  $B'(2, 6)$       C)  $B'(-5, 4)$       D)  $B'(8, 2)$

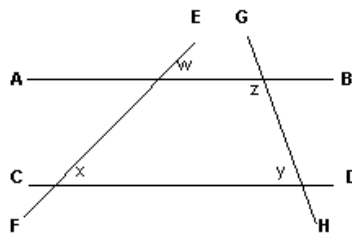
31) What is the slope of the line that passes through the points  $(1, 3)$  and  $(3, 7)$ ?

- A)  $\frac{1}{2}$       B) 2      C)  $\frac{1}{4}$       D) 4

32) Write an equation of the line that passes through the point  $(0, 3)$  and whose slope is 2.

- A)  $y = 2$       B)  $y = \frac{1}{2}x + 3$       C)  $y = 2x + 3$       D)  $y = 3x + 2$

33) In the diagram,  $\overrightarrow{AB}$ ,  $\overrightarrow{CD}$ ,  $\overrightarrow{EF}$ , and  $\overrightarrow{GH}$  are straight lines. If  $m\angle w = 30$ ,  $m\angle x = 30$ , and  $m\angle z = 120$ , find  $m\angle y$ .



- A) 15      B) 30      C) 60      D) 110

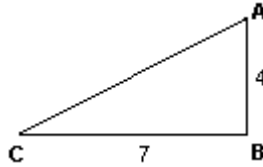
34) What are the coordinates of  $A'$ , the image of  $A(2, 3)$  after a reflection in the  $x$ -axis?

- A)  $A'(2, -3)$       B)  $A'(-2, -3)$       C)  $A'(-2, 3)$       D)  $A'(3, 2)$

35) If point  $R'(6, 3)$  is the image of point  $R(2, 1)$  under a dilation with respect to the origin, what is the constant of the dilation?

- A) 1                      B) 2                      C) 3                      D) 6

36) In the diagram of right triangle  $ABC$ ,  $AB = 4$  and  $BC = 7$ . What is  $AC$ , to the nearest hundredth?



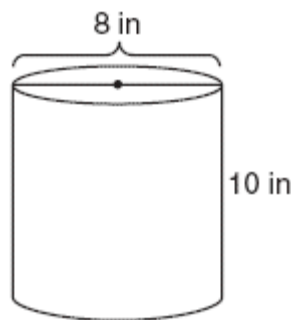
- A) 5.74                      B) 5.75                      C) 8.06                      D) 8.08

37) If  $x$  and  $y$  are defined as indicated by the accompanying table, which equation correctly represents the relationship between  $x$  and  $y$ ?

$x$	$y$
2	1
3	3
5	7
7	11

- A)  $y = x + 2$                       B)  $y = 2x + 2$                       C)  $y = 2x + 3$                       D)  $y = 2x - 3$

38) A storage container in the shape of a right circular cylinder is shown in the accompanying diagram.



What is the volume of this container, to the nearest hundredth?

- A)  $56.55 \text{ in}^3$                       B)  $125.66 \text{ in}^3$                       C)  $251.33 \text{ in}^3$                       D)  $502.65 \text{ in}^3$

39) What is the quotient of  $8.05 \times 10^6$  and  $3.5 \times 10^2$ ?

- A)  $2.3 \times 10^3$                       B)  $2.3 \times 10^4$                       C)  $2.3 \times 10^8$                       D)  $2.3 \times 10^{12}$

40) If  $\triangle ABC$  has vertices  $A(2, 0)$ ,  $B(3, -4)$  and  $C(5, 2)$ , what are the vertices of it's image after the translation  $(x, y) \rightarrow (x - 4, y + 2)$  ?

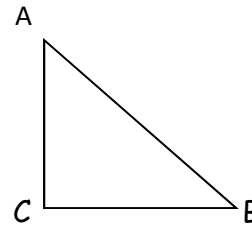
- A)  $A'(6, 2)$ ,  $B'(7, -2)$ ,  $C'(5, 4)$
- B)  $A'(-2, 2)$ ,  $B'(-1, -2)$ ,  $C'(1, 4)$
- C)  $A'(2, 2)$ ,  $B'(1, 2)$ ,  $C'(1, 4)$
- D)  $A'(-2, 2)$ ,  $B'(-1, -6)$ ,  $C'(1, 0)$

41) What is the value of  $23 - m + n$  when,  $m = 13$  and  $n = -31$ ?

- A) 5    B) 41    C) 67    D) -21

42) What is the hypotenuse of triangle ABC, shown:

- A) AB    B) BC    C) AC    D) CA



43) This table represents the relationship of the number of hours (h) Shana worked and her total earnings(E). Which equation represents the same relationship?

- A)  $E = 15h + 18$
- B)  $E = 10h + 23$
- C)  $E = 18h + 15$
- D)  $E = 33h$

h	E
1	33
2	51
3	69
4	87
5	105

44) The temperature on Saturday was 59 degrees Fahrenheit. What is this temperature in Celsius. Use the formula  $C = \frac{5}{9}(F - 32)$ .

- A) 15    B) 50    C) 27    D) 20

45) Find the side of a right triangle to the nearest tenth if the hypotenuse is 20 and one of the legs is 6.

- A) 19.1    B) 364.0    C) 20.1    D) 18.1

46)  $(x + 7)(2x^2 + 5x - 2)$



47) Which transformation flips a shape over a given line?

- A) Rotation      B) Reflection      C) Translation      D) Dilation

48) Which of the following is a solution to the equation  $y = 2x + 4$

- A) (14, 5)    B) (5, 14)    C) (10, 3)    D) (0,0)

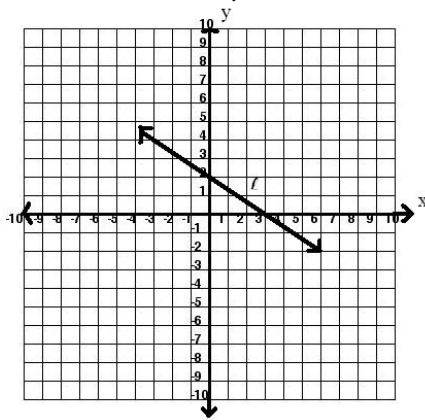
49) If  $c$  represents the number of candy bars, which verbal expression represents  $2c - 3$ ?

- A) twice the number of candy bars  
B) three more than twice the number of candy bars  
C) two more than three times the number of candy bars  
D) three fewer than twice the number of candy bars

50) The line  $y = \frac{3}{2}x - 6$  has

- (A) a slope of  $\frac{3}{2}$  and a y-intercept of -6    (B) a slope of  $-\frac{3}{2}$  and a y-intercept of 6  
(C) a slope of 3 and a y-intercept of -2    (D) a slope of -3 and a y-intercept of -6

51) What is the slope of line in the accompanying diagram?

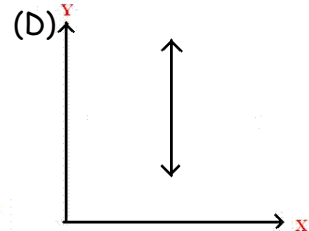
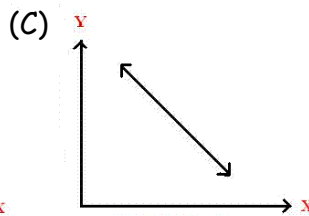
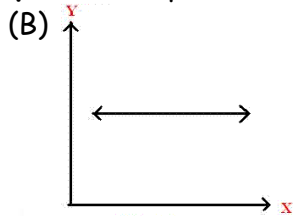
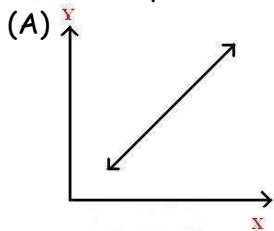


- (A)  $-\frac{3}{2}$   
(B)  $\frac{2}{3}$   
(C)  $-\frac{2}{3}$   
(D)  $\frac{3}{2}$

52) If a line is horizontal the slope is

- (A) 1      (B) undefined      (C) 0      (D) negative

53) Which line represents a **positive** slope?



54) Look at this system of equations.  $3x + y = -1$

$$3x + 3y = -8$$

Which of the following statements describes a possible first step in solving this system?

- A) Multiply the first equation by 1.
- B) Multiply the second equation by -1.
- C) Multiply the first equation by 3.
- D) Multiply the second equation by -3.

55) Look at this system of equations.  $x + 4y = 49$   
 $y = -2x$

What is the solution to this system?

- A) (-7, 14)    B) (-7, -14)    C) (7, 14)    D) (7, -14)

56)  $\sqrt{7}$  is considered which type of number?

- A) Whole    B) rational    C) irrational    D) integer

57) When  $2x^2 - 3x + 2$  is subtracted from  $4x^2 - 5x + 2$ , the result is

- 1)  $2x^2 - 2x$
- 2)  $-2x^2 + 2x$
- 3)  $-2x^2 - 8x + 4$
- 4)  $2x^2 - 8x + 4$

58) The sum of  $3x^2 + 5x - 6$  and  $-x^2 + 3x + 9$  is

- 1)  $2x^2 + 8x - 15$
- 2)  $2x^2 + 8x + 3$
- 3)  $2x^4 + 8x^2 + 3$
- 4)  $4x^2 + 2x - 15$