Probability/Inequalities/Exponents/Factoring and Graphing Quadratics Test Review

Name_____   **Class PD**_____

1. Find the prime factorization of 70.

2. Find the prime factorization of 189

3. Find the GCF of 48 and 72.

4. Find the GCF of 24 and 40.

5. Find the GCF of $2m^5$ and $32m^4$.

6. Find the GCF of $4y^2z^5$ and $32y^5z$.

7. Factor the polynomial $12y^3 + 33y^2 - 6y$.

8. Factor the polynomial $36b^3 + 32b^2 - 4b$.

9. The amount of paint needed to cover a wall is proportional to its area. The wall is rectangular and has an area of $4z^2 + 2z$ square meters. Factor this polynomial to find possible expressions for the length and width of the wall. (Assume the factors are polynomials.)

10.   Graph the parabola $y = -2x^2 - 12x - 16$.

1.   a=_____, b=_____, c=_____
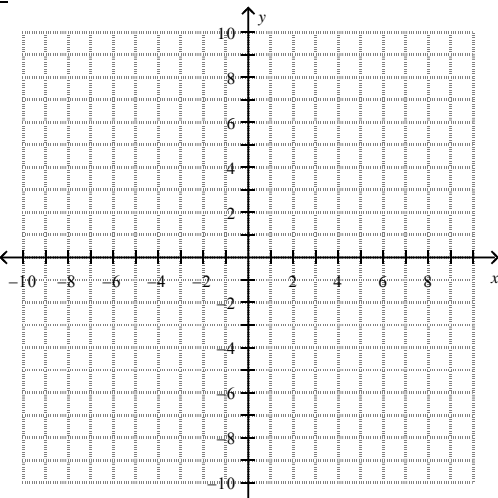
2.   Does the graph open up or down? _____

3.   The y-intercept is:_____

4.   The line of symmetry is:_ x=_____ Graph and label the axis

5.   The vertex is   (,   )

6.   Make a table of values and graph the 5 points: vertex, y-incpt. and 3 other points)

x	y

The zeros of this function are:

11.   Graph $y = -x^2 - 4x - 3$.

1.   a=_____, b=_____, c=_____
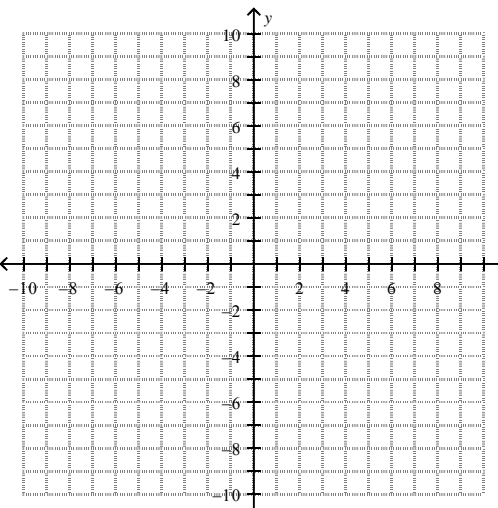
2.   Does the graph open up or down? _____

3.   The y-intercept is:_____

4.   The line of symmetry is:_ x=_____ Graph and label the axis

5.   The vertex is   (,   )

6.   Make a table of values and graph the 5 points: vertex, y-incpt. and 3 other points)
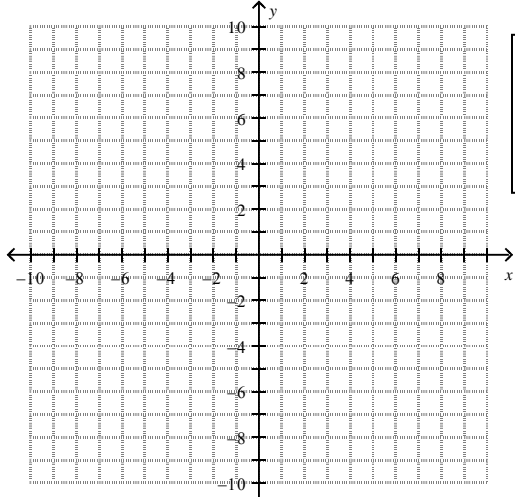
x	y

The zeros of this function are:

12. Graph $y = x^2 - 3x + 4$.

1. a=_____, b=_____, c=_____

2. Does the graph open up or down? _____

3. The y-intercept is:_____

4. The line of symmetry is:_ x=_____Graph and label the axis

5. The vertex is   (,   )

6. Make a table of values and graph the 5 points: vertex, y-incpt. and 3 other points)

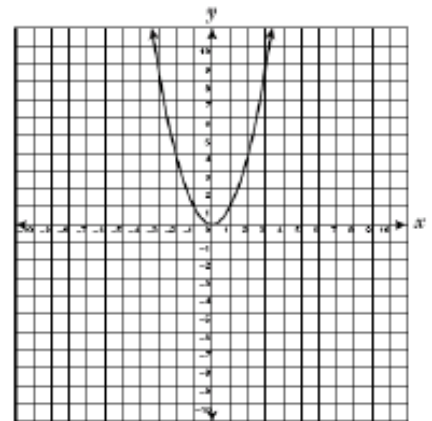| x	y

The zeros of this function are about:

13. TAKS

A)

22) The graph of the function $y = x^2$ is given to the right.

How will the graph be affected if the coefficient of x^2 is decreased to $\frac{1}{4}$?

F   The parabola will be wider.
G   The parabola will be narrower.
H   The parabola will be translated up.
J   The parabola will be translated down.

B)   18) Shirley graphed a function of the form $y = ax^2 + c$. She then translated the graph 8 units up, resulting in the function $y = -\frac{2}{3}x^2 + 5$. Which of the following best represents Shirley's original function?

F $y = -\frac{2}{3}x^2 + 13$ H $y = -\frac{2}{3}x^2 + 3$

G $y = -\frac{2}{3}x^2 - 13$ J $y = -\frac{2}{3}x^2 - 3$

14.   TAKS   A)

37) Which lists the functions of the form $y = ax^2$ in order from the widest to the narrowest graph?

A $y = \frac{7}{3}x^2, y = \frac{2}{3}x^2, y = \frac{1}{2}x^2, y = 2x^2$

B $y = \frac{1}{2}x^2, y = \frac{2}{3}x^2, y = 2x^2, y = \frac{7}{3}x^2$

C $y = \frac{7}{3}x^2, y = 2x^2, y = \frac{1}{2}x^2, y = \frac{2}{3}x^2$

D $y = 2x^2, y = \frac{7}{3}x^2, y = \frac{1}{2}x^2, y = \frac{2}{3}x^2$

B)   59) Which equation will produce the widest parabola when graphed?

A $y = 2x^2$ C $y = -0.6x^2$

B $y = -6x^2$ D $y = 0.2x^2$

15. Simplify $(x^5)^{-8}x^4$.   16.   Simplify $\dfrac{y^6 z^{12}}{(yz)^3}$.

17. The area of a rectangle is $54a^8b^2c^5$ square units   If the length of the rectangle is $6a^5bc^3$ units, how many units wide is the recatangle?   (a, b, c, are not equal to zero)

18. The edge of a cube measures 2.2×10^{-6} m. What is the volume of the cube in cubic centimeters?

19. The area of Australia/Oceania is approximately 7.69×10^6 square kilometers. Its population is approximately 3.11×10^7 people. What is the approximate population density (people per square kilometer) of Australia/Oceania? Write your answer in standard form. If necessary, round your answer to the nearest hundredth.

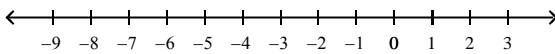20. Write an inequality to represent the graph.
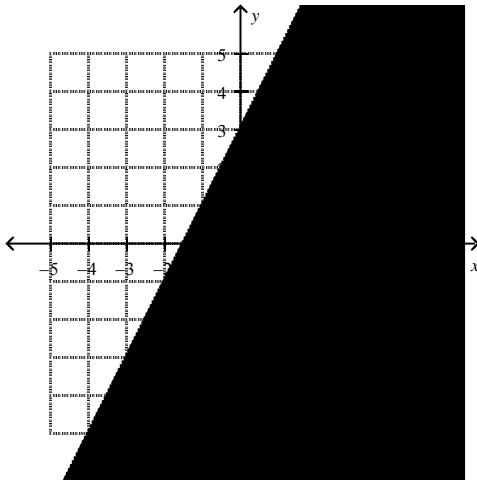
21. Graph the system of linear inequalities $\begin{cases} y < -3x + 2 \\ y \geq 4x - 1 \end{cases}$.

    Which of these ordered pairs are solutions to this system? $(0, 0), (2, 2), (1, 2), (-4, -5)$
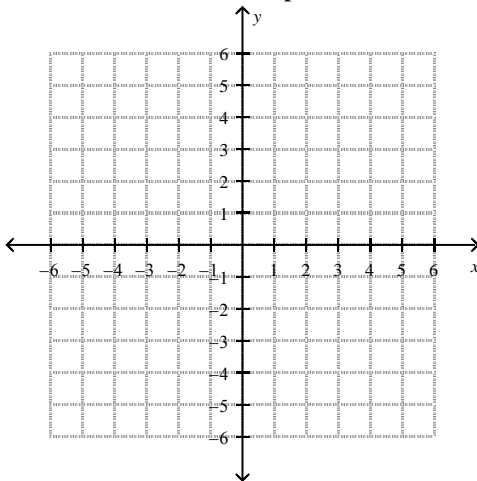
22. Solve and graph $4x < 6x + 12$.

23. Solve the inequality $z + 8 + 3z \leq -4$.   24.   Solve the inequality $-8(z + 6) \leq -8z - 7$.

25. An experiment consists of rolling a number cube. Find the theoretical probability of rolling a number less than or equal to 5. Express your answer as a fraction in simplest form.

26. The table below shows the results of rolling a fair cube 50 times in a classroom activity. What is the difference between the theoretical and experimental probability of rolling an odd number.

OUTCOME	FREQUENCY
1	13
2	8
3	9
4	0
5	12
6	8

27. A grab bag contains 3 football cards and 7 basketball cards. An experiment consists of taking one card out of the bag, replacing it, and then selecting another card. What is the probability of selecting a football card and then a basketball card? Express your answer as a decimal.

28. A bag contains hair ribbons for a spirit rally. The bag contains 3 black ribbons and 12 green ribbons. Lila selects a ribbon at random, then Jessica selects a ribbon at random from the remaining ribbons. What is the probability that Lila selects a black ribbon and Jessica selects a green ribbon? Express your answer as a fraction in simplest form.

29. A school has 6th, 7th, and 8th period Social Studies classes. One student from each class will be chosen to represent the school in an essay contest. The 6th period finalists are Manuel, Sarah, Luis, and Eiko. The 7th period finalists are Benji, Eric, and Sandra. The 8th period finalists are Hilda, Elizabeth, and Robby. How many different ways can the students be chosen?

30. An experiment consists of spinning a spinner. A) What is the theoretical probability that the spinner will land on a blue? B) What is the experimental probability that the spinner will land on a blue? C) What is the difference between the two probabilities? **Express your answers as percentages.**

| Outcome	Frequency
red	8
blue	6
yellow	13

Know your parent graphs: linear, quadratic, and how changing the leading coefficient will affect the graph..

Probability/Inequalities/Exponents Test Review
Answer Section

SHORT ANSWER

1. ANS:
   $2 \cdot 5 \cdot 7$
2. ANS:
   3,3,3,7
3. ANS:
   24
4. ANS:
   8
5. ANS:
   $2m^4$
6. ANS:
   $4y^2z$
7. ANS:
   $3y(4y^2 + 11y - 2)$
8. ANS:
   $4b(9b^2 + 8b - 1)$
9. ANS:
   $2z(2z + 1)$; possible dimensions: $2z$ meters by $(2z + 1)$ meters
10. ANS:

    a= -2, b=-12, c=-16; graph opens down;
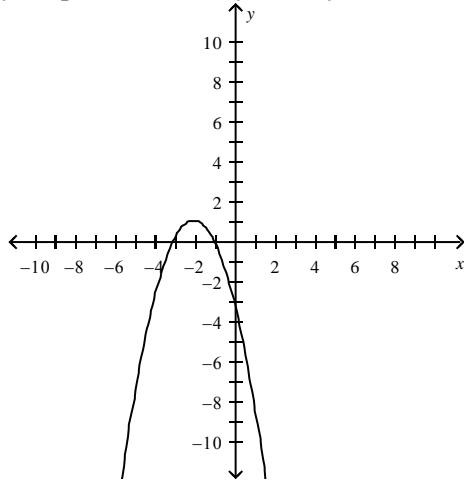
    y-incpt.=-16; axis of symm: x=-3; vertex:(–3, 2)
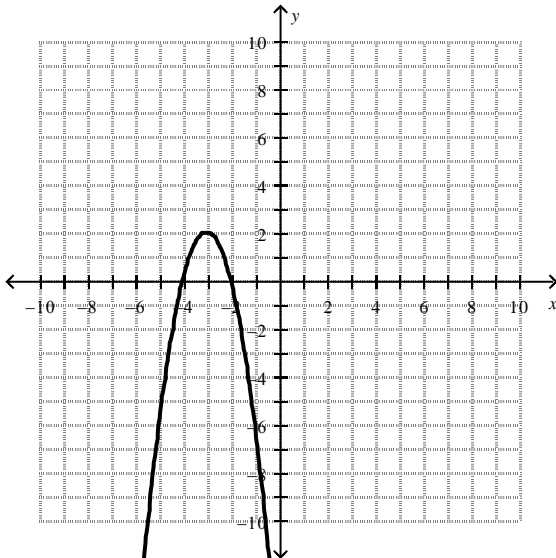
The zeros of $y = -2x^2 - 12x - 16$ are –2 and –4.

The axis of symmetry is at $x = -\frac{b}{2a} = -\frac{-12}{2(-2)} = -3$.

When $x = -3$, $y = 2$. The vertex of the parabola is (–3, 2).

zeros ((-4, 0), (-2, 0)

11. ANS: a=-1, b=-4, c=-3; graph opens down;
    y-incpt=-3; asis of symmetry x=-2; vertes⊗-2, 1)
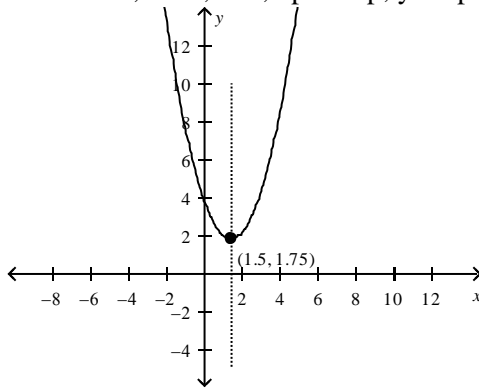

$$x = -\frac{b}{2a} = -\frac{-4}{2(-1)} = -2$$

(–2, 1).

This is the c-value in the equation, or –3.

Zeros (-3, 0), (-1, 0)

12. ANS: a=1, b=-3, c=4, opens up; y-incpt=4

(1.5, 1.75)

The axis of symmetry is $x = \frac{3}{2}$. The vertex is $\left(\frac{3}{2}, \frac{7}{4}\right)$.

Step 1: Find the axis of symmetry.

$$x = \frac{-(-3)}{2} = \frac{3}{2} \qquad \text{Use } x = \frac{-b}{2a}. \text{ Substitute 1 for } a \text{ and } -3 \text{ for } b.$$

Step 2: Find the vertex.

$$y = x^2 - 3x + 4$$

$$y = \left(\frac{3}{2}\right)^2 - 3\left(\frac{3}{2}\right) + 4 \qquad \text{Substitute } \frac{3}{2} \text{ for } x.$$

$$y = \frac{7}{4} \qquad \text{The } y\text{-coordinate is } \frac{7}{4}.$$

The vertex is $\left(\frac{3}{2}, \frac{7}{4}\right)$.

There are no zeros for this function

13. ANS:
    A)f   B) f

14. ANS:
    A) b,   B) d

15. ANS:

$$\frac{1}{x^{36}}$$

16. ANS:

$$y^3 z^9$$

17. ANS:

$9a^3 bc^2 \text{units}$

18. ANS:

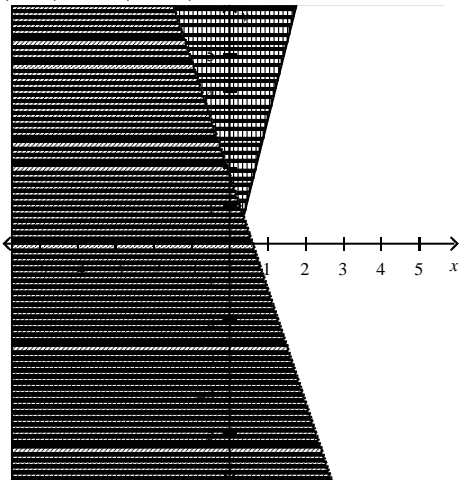$1.06 \times 10^{-17} \text{ cm}^3$

19. ANS:

4.04 people/km^2

20. ANS:

$y < 2x + 3$

21. ANS:
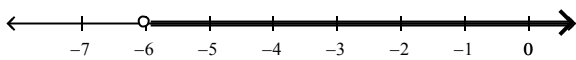
$(0, 0)$ and $(-4, \ -5)$ are solutions.
$(2, 2)$ and $(10, 1)$ are not solutions.
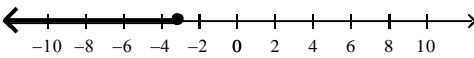

22. ANS:

$x > -6$

23. ANS:

$z \leq -3$

24. ANS: all real numbers

25. ANS:

$$\frac{5}{6}$$

26. ANS:

.02=1/50

27. ANS:

0.21

28. ANS:
    $.\overline{6}$
    35

29. ANS:
    36
    Use the Fundamental Counting Principle. There are 4 6th period finalists, 3 7th period finalists, and 3 8th

30. ANS:
    A) 33.3%   B) 22.2%   C) difference=11.1%