Algebra 1 Mastery Test #10 Review

Solve the system:

1. $x - y = -10$

    $-3x + y = 20$

2. Rewrite using only positive exponents: $-2a^{-2}b^3c^2$

3. The amount of money, A, accrued at the end of n years when a certain amount, P, is invested at a compound annual rate, r, is given by $A = P(1+r)^n$. If a person invests \$150 in an account that pays 10% interest compounded annually, find the balance after 5 years.

Find the sum.

4. $\left(2a^7 + 3a^2 - 7\right) + \left(-2a^2 + 6 + 7a^7\right)$

Find the difference.

5. $\left(4h^3 + 4h^2 + 2\right) - \left(9h^3 - 8h^2 + 9h - 9\right)$

Find the product.

6. $(5c + 1)(5c - 1)$

Factor the trinomial.

7. $7x^2 - 43x - 42$

Solve the equation.

8. $x^2 + 4x - 12 = 0$
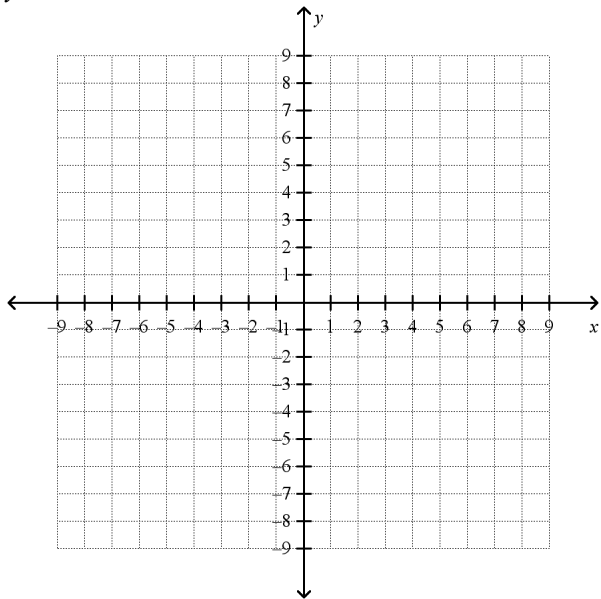
Solve the equation.

9. $16g^2 + 40g + 25 = 0$

____ 10. How would you change the graph of $y = x^2$ to produce the graph of $y = x^2 - 6$?
   a.   shift the graph of $y = x^2$ left 6 units
   b.   shift the graph of $y = x^2$ up 6 units
   c.   shift the graph of $y = x^2$ right 6 units
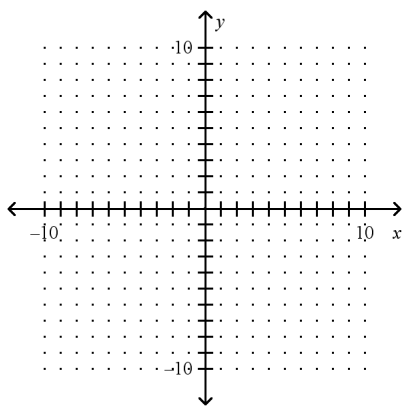   d.   shift the graph of $y = x^2$ down 6 units

Graph:

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

12. $y = x^2 + 3x - 5$

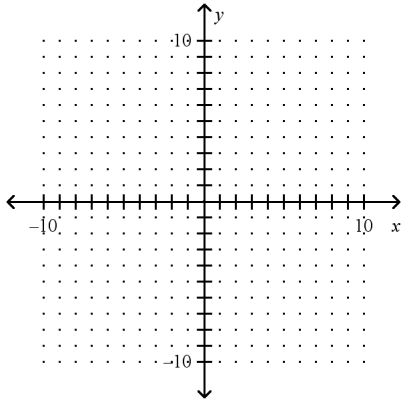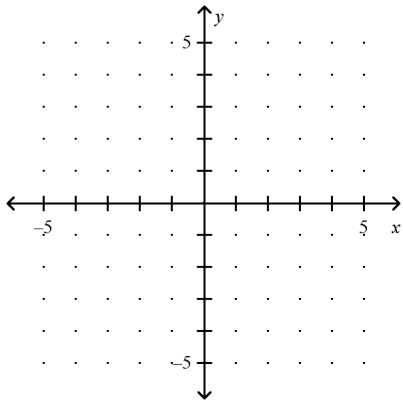**Solve the equation by graphing.**

13. $x^2 - 8x + 7 = 0$

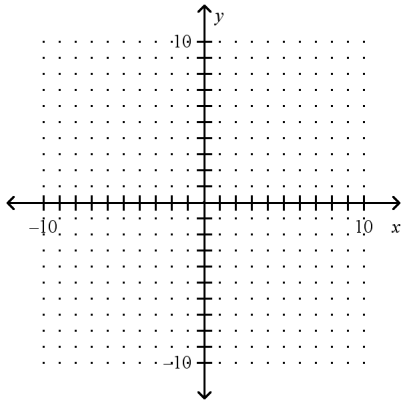**Solve the equation by graphing, approximate your answers to the nearest tenth.**

14. $x^2 - 4x + 3 = 0$

15. $x^2 - 10x + 19 = 0$

Graph the following function, and determine the zeros, if there are any.

16. $f(x) = 3x^2 - 9x + 6$

Solve the quadratic equation.

17. $x^2 + 6x + 3 = 0$

Use the quadratic formula to solve the equation.

18. $x^2 = 15x - 37$

19. $x^2 - 9x + 7 = 0$

20. What are the mean, median, and mode(s) of the data?
2, 17, 26, 27, 14, 4, 12, 26, 26, 6

21. Jake's test scores for the first term of chemistry class were 78, 68, 73, 94, and 62. Which of the measures of central tendency or dispersion would make Jake's test scores seem as high as possible?

22. Make a two-way frequency table for the following data.

At State College, 500 juniors and seniors are taking a performing arts course. 206 sing in the chorus, 85 are in theater, and the rest are in dance. No one takes more than one performing arts course. There are 86 juniors taking chorus, 37 seniors taking theater, and a total of 225 seniors taking a performing arts course.

23. Ann records how many push-ups she and several of her friends can do in one minute. Draw a stem-and-leaf plot to represent the data she collected.
11, 11, 12, 13, 30, 15, 16, 16, 17

24. Draw a box-and-whisker plot of the data. 40, 37, 29, 36, 41, 39, 33

The box-and-whisker plots below show the average monthly temperatures for Mexico City, Mexico, and Shanghai, China, in degrees Fahrenheit.
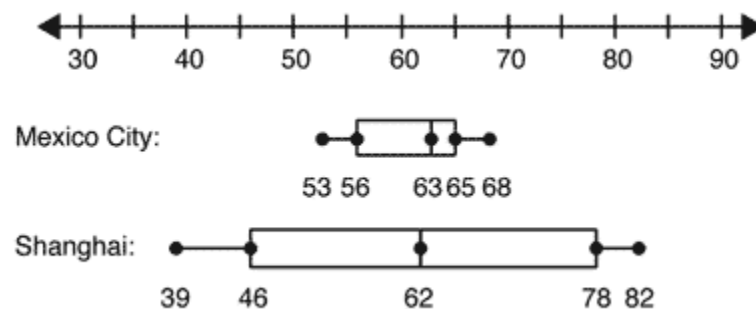
25. Which city has a higher median temperature?

Algebra 1 Mastery Test #10 Review
Answer Section

1. ANS:
   $(-5, 5)$

   TOP: Lesson 6.3 Solve Linear Systems by Adding or Subtracting

2. ANS:
   $$\frac{-2\,b^3 c^2}{a^2}$$

   TOP: Lesson 7.3 Define and Use Zero and Negative Exponents

3. ANS:
   $242

   TOP: Lesson 7.4 Write and Graph Exponential Growth Functions

4. ANS:
   $9a^7 + a^2 - 1$

   TOP: Lesson 8.1 Add and Subtract Polynomials

5. ANS:
   $-5h^3 + 12h^2 - 9h + 11$

   TOP: Lesson 8.1 Add and Subtract Polynomials

6. ANS:
   $25c^2 - 1$

   TOP: Lesson 8.3 Find Special Products of Polynomials

7. ANS:
   $(7x + 6)(x - 7)$
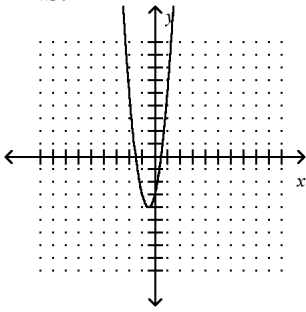
   TOP: Lesson 8.6 Factor ax^2 + bx + c

8. ANS:
   $-6, 2$

   TOP: Lesson 8.5 Factor x^2 + bx + c

9. ANS:
   $g = -\dfrac{5}{4}$
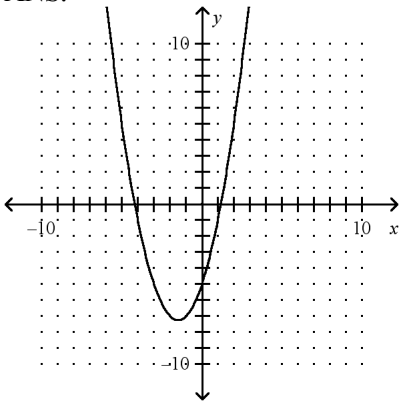
   TOP: Lesson 8.7 Factor Special Products

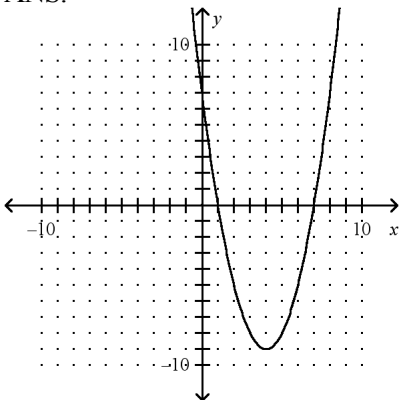10. ANS: D   TOP: Lesson 9.1 Graph y = ax^2 + c

11. ANS:

TOP: Lesson 9.2 Graph y = ax^2 + bx + c

12. ANS:

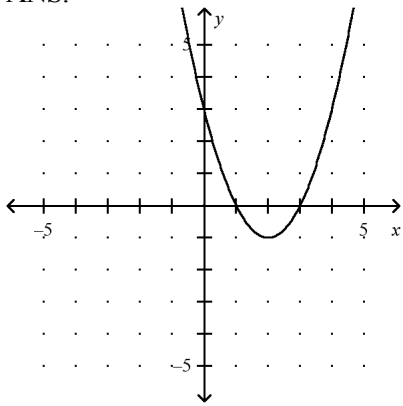TOP: Lesson 9.2 Graph y = ax^2 + bx + c

13. ANS:

$x = 1$ and $x = 7$

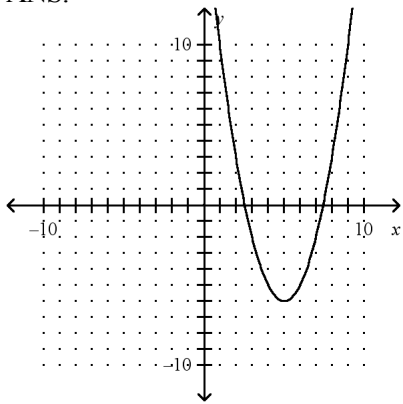TOP: Lesson 9.3 Solve Quadratic Equations by Graphing

14. ANS:

$x = 3$ and $x = 1$

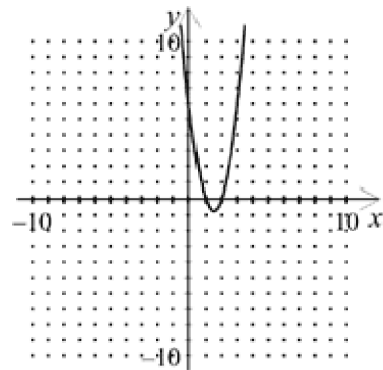TOP: Lesson 9.3 Solve Quadratic Equations by Graphing

15. ANS:

7.4, 2.6

TOP: Lesson 9.3 Solve Quadratic Equations by Graphing

16. ANS:

2, 1

TOP: Lesson 9.3 Solve Quadratic Equations by Graphing

17. ANS:
$-3 + \sqrt{6}, -3 - \sqrt{6}$

TOP: Lesson 9.6 Solve Quadratic Equations by the Quadratic Formula

18. ANS:
$\dfrac{15 - \sqrt{77}}{2}, \dfrac{15 + \sqrt{77}}{2}$

TOP: Lesson 9.6 Solve Quadratic Equations by the Quadratic Formula

19. ANS:
$\dfrac{9 - \sqrt{53}}{2}, \dfrac{9 + \sqrt{53}}{2}$

TOP: Lesson 9.6 Solve Quadratic Equations by the Quadratic Formula

20. ANS:
16, 15.5, 26

TOP: Lesson 10.2 Use Measures of Central Tendency and Dispersion

21. ANS:
mean

TOP: Lesson 10.2 Use Measures of Central Tendency and Dispersion

22. ANS:

	Chorus	Theater	Dance	Total
Juniors	86	48	141	275
Seniors	120	37	68	225
Total	206	85	209	500

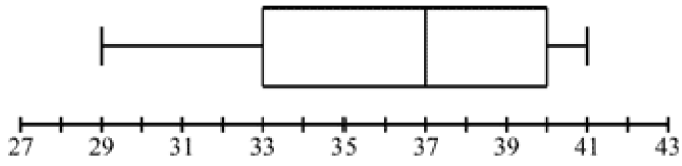TOP: Lesson 10.3 Analyze Data

23. ANS:
Stem Leaves

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1 | 1 1 2 3 5 6 6 7
2 |
3 | 0
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TOP: Lesson 10.4 Interpret Stem-and-Leaf Plots and Histograms

24. ANS:

TOP: Lesson 10.5 Interpret Box-and-Whisker Plots

25. ANS:
Mexico City

TOP: Lesson 10.5 Interpret Box-and-Whisker Plots