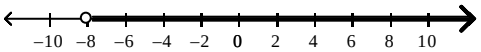
Charles Herbert Flowers High School
Science & Technology Algebra Placement Exam
2006-2007
Form A

Computational Skills. ***Write all answers in the simplest form.***

1. $7.2 \times 15.69 =$
2. $2.7 \div 12.5 =$
3. $6\frac{1}{3} + 5\frac{5}{6} =$
4. $1\frac{1}{3} \times 1\frac{5}{9} =$
5. $1\frac{1}{3} \div 2\frac{1}{2} =$
6. Find 78% of 380. Round to the nearest tenth of a percent if necessary.
7. Order $\frac{1}{4}$, $\frac{2}{7}$, and $\frac{5}{6}$ from least to greatest.
8. $d + 0.7 = 0.9$
9. Over the first five years of owning her car, Gina drove about 12,700 miles the first year, 15,478 miles the second year, 12,675 the third year, 11,850 the fourth year, and 13,075 the fifth year.
   a. Find the mean, median, and mode of this data.

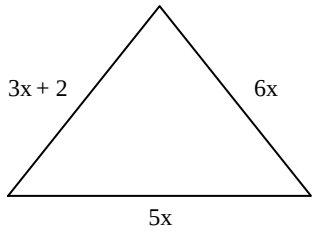
10. Evaluate $u + xy$, for $u = 18$, $x = 10$, and $y = 8$.

Algebra Skills:

1. Simplify: $3\left[(15-3)^2 \div 4\right]$
2. Simplify: $(-7x - 5x^4 + 5) - (-7x^4 - 5 - 9x)$
3. Simplify: $3p^4(4p^4 + 7p^3 + 4p + 1)$
4. Simplify: $(4x + 3)(2x + 5)$
5. Simplify $\sqrt{\frac{100}{9}}$.
6. Simplify: $\frac{4x - 8}{4x + 20}$
7. Write an inequality for the Graph: 

8. Solve: $\frac{4}{x+2} = \frac{2}{x-3}$
9. Solve: $3p - 1 = 5(p - 1) - 2(7 - 2p)$
10. Find the percent of change in altitude if a weather balloon moves from 100 ft to 103 ft. Describe the percent of change as an increase or decrease. Round to the nearest tenth if necessary.
11. Find the common difference of the arithmetic sequence: 9, 13, 17, 21, . . .
12. Write $y = \frac{2}{3}x + 7$ in standard form using integers.
13. Graph: $y = \frac{3}{4}x - 3$
14. Graph: $y + 5 = -(x + 2)$
15. Find a solution to the following system of equations.
    $-5x + y = -5$
    $-4x + 2y = 2$

16. Evaluate $\frac{1}{2^{-2}x^{-3}y^{5}}$ for $x = 2$ and $y = -4$.
17. Write the number in scientific notation: 8,670,000,000
18. Write the perimeter of the figure.



not to scale

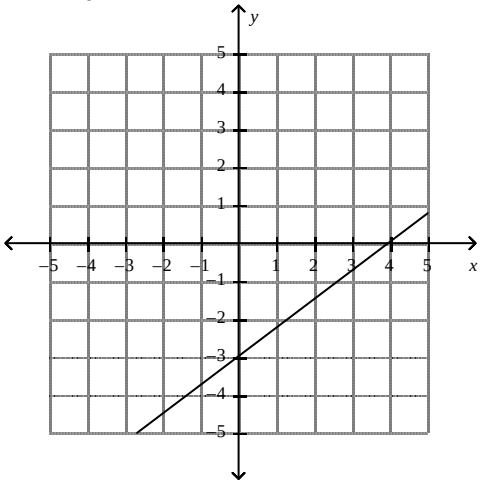
19. Factor: $2x^3 + 4x^2 + 8x$
20. Factor: $24w^{12} + 64w^8$
21. Find the equation of the axis of symmetry and the coordinates of the vertex of the graph of the function.
    $f(x) = -2x^2 - 2x - 1$.
22. Solve the equation using square roots: $7x^2 + 6 = 13$
23. Solve the equation by factoring: $15 = 8x^2 - 14x$
24. Add: $\frac{-5x}{x-9} - \frac{-8}{x-9}$
25. A rocket is launched from atop a 101-foot cliff with an initial velocity of 116 ft/s.
    a. Substitute the values into the vertical motion formula $h = -16t^2 + vt + c$. Let $h = 0$.
    b. Use the quadratic formula find out how long the rocket will take to hit the ground after it is launched. Round to the nearest tenth of a second.

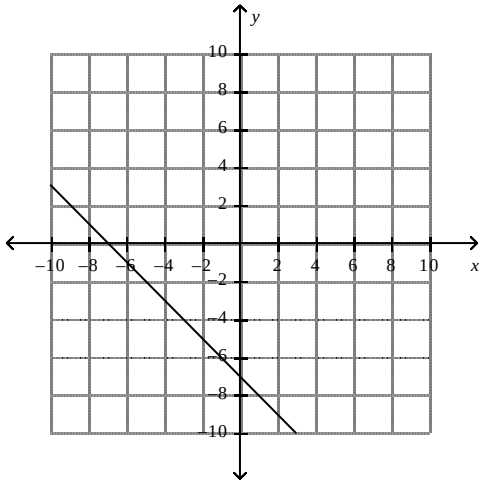
Science & Technology Algebra Placement Exam
Answer Section

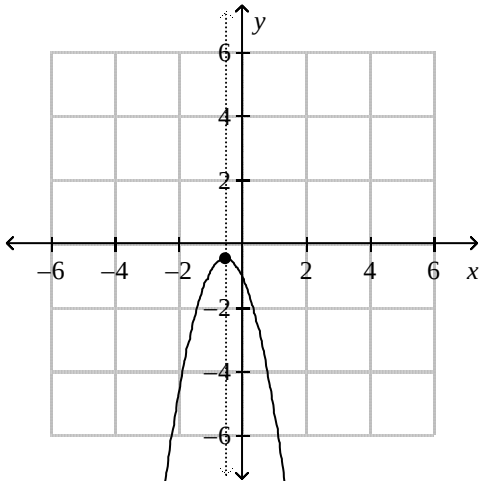
SHORT ANSWER

1. 112.968
2. 0.216
3. $12\frac{1}{6}$
4. $2\frac{2}{27}$
5. $\frac{8}{15}$
6. 296.4
7. $\frac{1}{4}, \frac{2}{7}, \frac{5}{6}$
8. 0.2
9. mean = 13,156; median = 12,700; no mode; the median is the best choice because it is not skewed by the high outlier.
10. 98

Algebra Skills

1. 108
2. $2x^4 + 2x + 10$
3. $12p^8 + 21p^7 + 12p^5 + 3p^4$
4. $8x^2 + 26x + 15$
5. $\frac{10}{3}$
6. $\frac{x-2}{x+5}$
7. $x > -8$
8. $x = 8$
9. 3
10. 3%; increase
11. 4
12. $-2x + 3y = 21$
13. 

14. 

15. (2, 5)
16. $-\frac{1}{32}$
17. 8.67×10^9
18. $14x + 2$
19. $2x(x^2 + 2x + 4)$
20. $8w^8(3w^4 + 8)$
21. 

Axis of symmetry: $x = -0.5$
Vertex: $(-0.5, -0.5)$
22. ± 1
23. $-\frac{3}{4}, \frac{5}{2}$
24. $\frac{-5x+8}{x-9}$
25. $0 = -16t^2 + 116t + 101$; 8 s