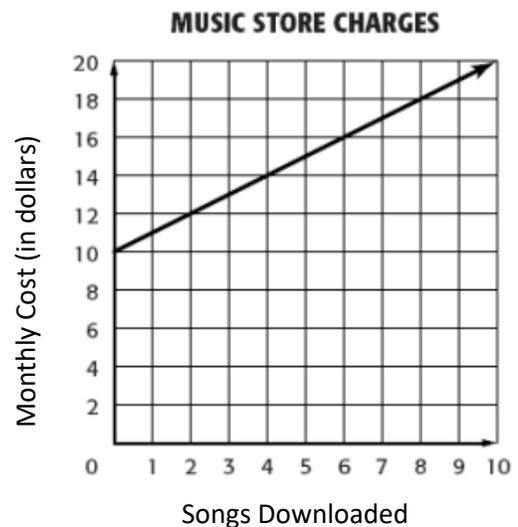


Mesa College - Math 92 - Advancement Exam SAMPLE PROBLEMS

Directions: You may only use the scientific calculator provided by the test proctor. Write neatly and show your work. Answers without appropriate work shown will receive no credit. Attach your neat, organized solution sheets behind this cover sheet. Make sure solution is properly labeled. Be sure to write your answer in simplest form and round as specified.

1. Use the formula $I = Prt$ to find I for $P = 2575$, $r = 0.043$ and $t = 5$.
Round your answer to 2 decimal places.
2. Solve for p : $21p + 17 = 9p - 13$
3. Solve for d : $8(d + 24) = 32d + 24$
4. Solve for x : $\frac{1}{2}x + \frac{3}{4} = \frac{3}{8}(x - 3)$
5. Solve for z : $5.2z - 4.2 = -5.112 + 7.6z$
6. Round 67,423.4625 to the thousandths place.
7. Converting each number to a fraction, decimal and percent.
 - a. Change $\frac{7}{8}$ to a decimal and to a percent.
 - b. Change 1.39 to a fraction and a percent.
 - c. Change 27% to a fraction and a decimal.
8. Use the graph to answer the following questions.
 - a. What is the y-intercept?
 - b. What is the meaning of the y-intercept?
 - c. What is the slope of the line?
 - d. What is the meaning of the slope?

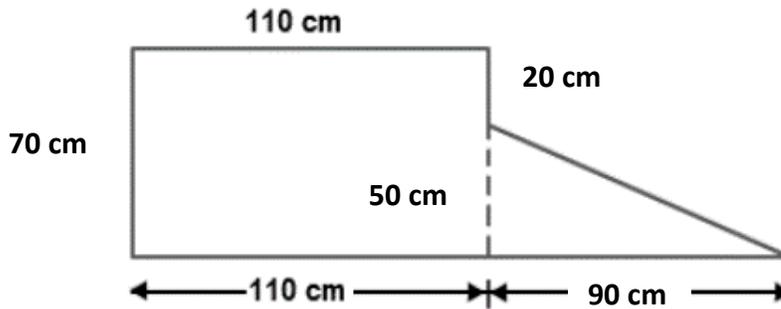


9. Multiply or divide and write the answer in scientific notation:

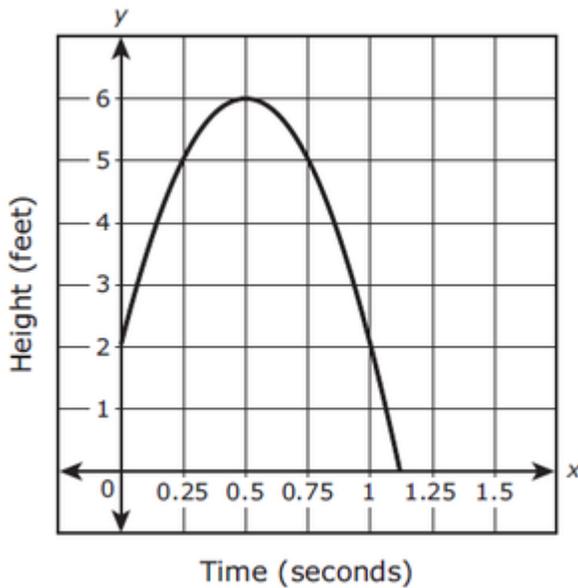
a. $(2.4 \times 10^{-2}) \times (4.1 \times 10^5)$

b. $(9.3 \times 10^4) \div (1.5 \times 10^{-3})$

10. Find the area and perimeter of the figure below. Round to the tenths place if needed.



11. The graph below shows the path of a softball that is thrown up in to the air.



a. Estimate the y-intercept. Interpret its meaning.

b. Estimate the x-intercept. Interpret its meaning.

c. Estimate the maximum point on the graph. Interpret its meaning.

12. Evaluate $\log 8.29$ and round answer to the hundredths place.

13. A new car that sells for \$18,000 depreciates 25% each year. Write a function that models the value, $V(x)$ of the car after x years. Find the value of the car after 4 years.
14. The world population in 2000 was approximately 6.08 billion. The annual rate of increase was about 1.26%. Let t be the number of years since 2000 and write a function that models the population, $P(t)$. Find the expected population in the year 2025.

SOLUTIONS

1. 553.63 2. $p = -2.5$ 3. $d = 7$
4. $x = -15$ 5. $z = 0.38$ 6. 67,423.463
- 7a. $\frac{7}{8} = 0.875 = 87.5\%$ 7b. $1.39 = 1\frac{39}{100} = 139\%$ 7c. $27\% = \frac{27}{100} = 0.27$
- 8a. $(0, 10)$ 8b. There is a monthly fee of \$10.
- 8c. $m = 1$ 8d. It costs \$1 for each song that is downloaded.
- 9a. 9.84×10^3 9b. 6.2×10^7 10. area = $9,950 \text{ cm}^2$ perimeter = 503 cm
- 11a. The y-intercept is $(0, 2)$ and shows that the softball was thrown from an initial height of 2 feet.
- 11b. The x-intercept is approximately $(1.1, 0)$ and shows that the softball hits the ground about 1.1 seconds after it is thrown.
- 11c. The maximum point is $(0.5, 6)$ and shows that the softball reaches its maximum height of 6 ft, 0.5 seconds after it is thrown.
12. 0.92 13. $V(x) = 18,000 * 0.75^x$ After 4 years the car will be worth \$5695.31
14. $P(t) = 6.08 * 1.0126^x$ In the year 2025, the population will be about 8.31 billion.