

Sample Documents

NC Stnd Course of Study
(NC1)

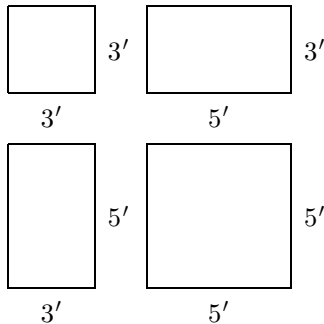
EDUCAIDE SOFTWARE

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Write your answers on the answer sheets you are given. You will have 45 minutes to complete these questions.

Short Answer

- If you pile apples in a pyramid with 1 in the top layer, 4 in the next layer, 9 in the third layer, and 16 in the fourth layer, how many apples will you need to make a pile with 6 layers?
- Write each of these numbers in scientific notation.
 - 4,860,000,000
 - 0.73
- Your kitchen is $12' \times 14'$. Tiles come in boxes of 100. Each tile is 4 inches square. How many boxes of single-color tiles do you need to purchase?
- John has the pieces of lumber pictured. Can those four pieces be glued together to form a board with an area of 64 sq ft?



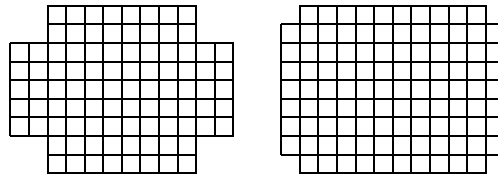
- If a giraffe stands 576 cm tall, how long a shadow would it cast if it is compared to a man who is 180 cm tall casting a shadow 1 m long?
- Mary made a series of deposits and withdrawals from her account. Use an integer to represent the current status of the account.

<u>Date</u>	<u>Deposit</u>	<u>Withdrawals</u>
2-28	\$52	\$36
3-1		\$ 8
3-2	\$40	\$16
3-10		\$ 4

- The formula $d = r \times t$ can be used to find the distance d traveled when the rate r and time t are known. Use the formula to determine how far a bus traveling at the rate of 65 mph can travel in 4 hours?
- The equation $\triangle + \square = 12$ indicates that the sum of two numbers is 12. Find four pairs of replacements for \triangle and \square which will make the equation true.

Essay Questions

- Boxes without lids can be formed by cutting out corner squares from a sheet of graph paper and folding on the lines. How many different size boxes can be constructed from a 9×12 sheet? Which box has the greatest surface area? Which has the greatest volume? Explain.



- Find a calculator value for $\sqrt{2}$. Is the calculator value exactly equal to $\sqrt{2}$? Explain.
- Students in science class want to measure rainfall. They plan to keep daily and monthly records. What measurement tools do they need and to what degree of accuracy should they try to measure?
- Write five expressions equivalent to 4^3 . In each case explain why the expression is equal to 4^3 .

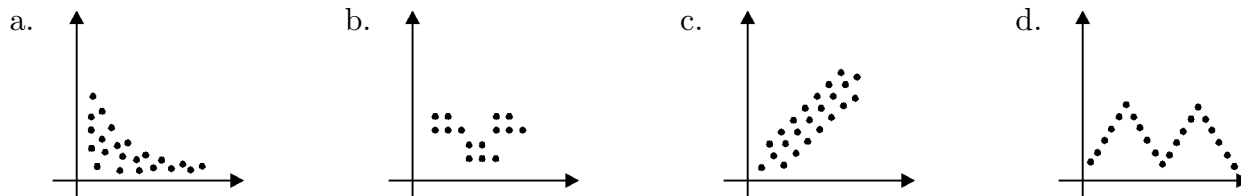
Answer List

- | | | |
|--|--|---|
| 1. 91 apples | 2. a. 4.86×10^9 ; b. 7.3×10^{-1} | 3. 16 boxes |
| 4. yes | 5. 3.2m | 6. \$28 |
| 7. 260 miles | 8. (1, 11), (2, 10), (3, 9), (4, 8),
etc. | 9. 4 differently sized boxes;
surface area: $10 \times 7 \times 1$ box;
volume: $8 \times 5 \times 2$ box |
| 10. 1.4142...; no, [explanations
will vary] | 11. [answers will vary] | 12. [answers will vary] |
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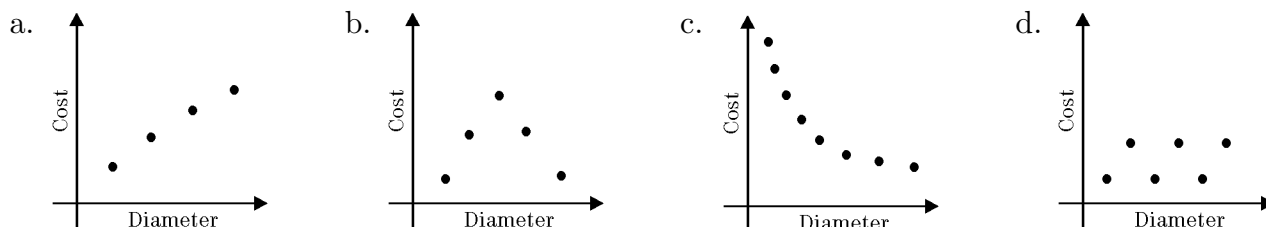
Catalog List

- | | | |
|--------------|--------------|--------------|
| 1. NC1 BC 2 | 2. NC1 CA 7 | 3. NC1 BE 9 |
| 4. NC1 DD 3 | 5. NC1 CB 3 | 6. NC1 AA 16 |
| 7. NC1 BC 7 | 8. NC1 BC 4 | 9. NC1 BD 2 |
| 10. NC1 CA 9 | 11. NC1 CD 6 | 12. NC1 CA 5 |

1. Which data appear linear?



2. Which graph best represents the relationship between the cost of pizzas of various diameters?



3. Erin earns \$24,000 per year in salary and 8% commission on her sales. If she must have a total income of at least \$30,000 to pay her expenses, what is the least amount she must sell in order to do this?

- a. \$6,000 b. \$14,000 c. \$54,000 d. \$75,000

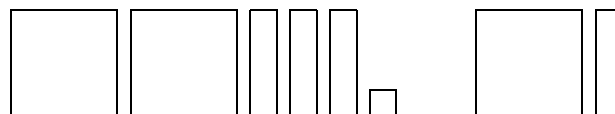
4. Write a polynomial for each model. Then find the sum of the two polynomials.

a. $3x^2 + 4x + 1$

b. $x^2 + 4x + 1$

c. $x^2 + 2x + 1$

d. $2x^2 + 2x - 1$



5. Simplify: $\frac{x}{2x + 2} - \frac{2}{x + 1}$

a. $\frac{x^2 - 2x + 2}{2(x + 1)(x + 2)}$

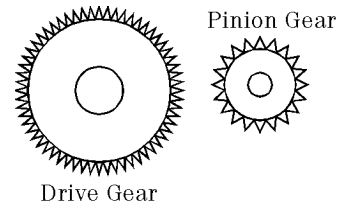
b. $\frac{x^2 - 2x + 4}{2(x + 1)(x + 2)}$

c. $\frac{x - 4}{2(x + 1)}$

d. $\frac{x^2 - 6x + 4}{2(x + 1)(x + 2)}$

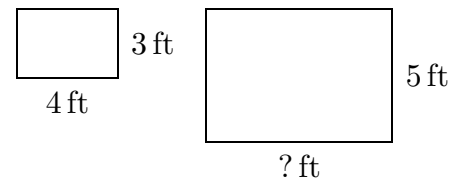
6. There are 28 cylindrical columns in a shopping mall that need repainting. Each column measures 14 ft tall and 4.7 ft around. If a gallon of paint covers 400 square feet, how many gallons are needed to paint all 28 columns?

7. The angular speed of each moving gear is inversely proportional to the number of teeth on the gear. Suppose the drive gear has 60 teeth and the pinion gear has 20 teeth. If the drive gear makes 10 revolutions per minute, how many revolutions per minute will the pinion gear make?



8. The sum of the digits of a two-digit number is 9. If the digits are reversed the new number is 27 more than the original number. Find the original number.

9. Set up a proportion based on the similar figures.



10. Write an expression involving the subtraction of integers which has -8 as its answer.

11. Sketch a reasonable graph which represents an individual's height as he ages. Label both axes and write a sentence or two to justify the shape or behavior of your graph.

Answer List

- | | | |
|-------------------------|----------------------------------|--------------------------------|
| 1. c | 2. a | 3. d |
| 4. a | 5. c | 6. ≈ 4.6 gallons |
| 7. 30 rpm | 8. 36 | 9. $\frac{4}{3} = \frac{?}{5}$ |
| 10. [answers will vary] | 11. [graph]; [answers will vary] | |
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Catalog List

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|--------------|---------------|--------------|
| 1. NC1 EG 5 | 2. NC1 FD 9 | 3. NC1 FC 26 |
| 4. NC1 EI 3 | 5. NC1 FI 10 | 6. NC1 HC 11 |
| 7. NC1 HB 8 | 8. NC1 GF 14 | 9. NC1 HB 4 |
| 10. NC1 FA 3 | 11. NC1 GD 14 | |