

Sample Documents

NC Algebra I (NC3)

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Algebra I

NC Math Objectives - Goal 4

Name _____

Per/Sec. _____

Please circle answers.

1. Simplify: $-4 \begin{bmatrix} 7 & -2 \\ -3 & 4 \end{bmatrix}$

a) $\begin{bmatrix} -28 & -2 \\ -3 & 4 \end{bmatrix}$ b) $\begin{bmatrix} -28 & 8 \\ 12 & -16 \end{bmatrix}$

c) $\begin{bmatrix} -28 & -8 \\ -12 & -16 \end{bmatrix}$ d) $\begin{bmatrix} 28 & -8 \\ -12 & 16 \end{bmatrix}$

e) $\begin{bmatrix} -28 & 8 \\ -3 & 4 \end{bmatrix}$

2. Solve for x and y .

$$\begin{bmatrix} 2x + y \\ -9 \end{bmatrix} = \begin{bmatrix} -1 \\ 3x - y \end{bmatrix}$$

a) $(-2, 3)$ b) $(0, -3)$ c) $(2, -3)$

d) $(-2, -3)$ e) $(1, -2)$

3. 1st Quarter Algebra Grades

	A	B	C	D
1st Period	4	6	5	5
2nd Period	2	4	9	3
3rd Period	3	3	10	6

What are the dimensions of the matrix associated with this table?

a) 3×4 b) 4×3 c) 4×4 d) 4×5 e) 5×4

4. The following matrix represents the clothing inventory of a school bookstore.

	Medium	Large
Shirts	250	420
Shorts	425	550
Sweaters	110	175

How many medium-sized clothing articles does the bookstore have in stock?

a) 110 b) 250 c) 500 d) 670 e) 785

5. At a local department store, a pair of slacks cost \$36.99, a dress costs \$85.99 and a pair of shoes cost \$45.99. Create a 3×2 matrix that represents the discounted cost of each item on Friday and Saturday if there is a store-wide discount of 25% on Friday and 30% on Saturday.

a) $\begin{bmatrix} 9.25 & 11.10 \\ 21.50 & 25.80 \\ 11.50 & 13.80 \end{bmatrix}$ b) $\begin{bmatrix} 27.18 & 25.89 \\ 63.20 & 60.19 \\ 33.77 & 32.19 \end{bmatrix}$

c) $\begin{bmatrix} 27.74 & 25.89 \\ 64.49 & 60.19 \\ 34.49 & 32.19 \end{bmatrix}$ d) $\begin{bmatrix} 27.74 & 19.42 \\ 64.49 & 45.14 \\ 34.49 & 24.14 \end{bmatrix}$

e) $\begin{bmatrix} 11.99 & 6.99 \\ 60.99 & 55.99 \\ 20.99 & 15.99 \end{bmatrix}$

6. Which of the following can be represented by a first-degree equation in two variables with non-zero coefficients?

a) parabola b) vertical line

c) horizontal line d) oblique line

e) ellipse

7. The graph of which of the following would show a linear relationship?

a) The number of roses ordered from February 1st to February 28th recorded daily.

b) The distance covered by a motorcycle going across Grandfather Mountain recorded every 10 minutes.

c) The appropriate number of candles on a person's birthday cake recorded yearly.

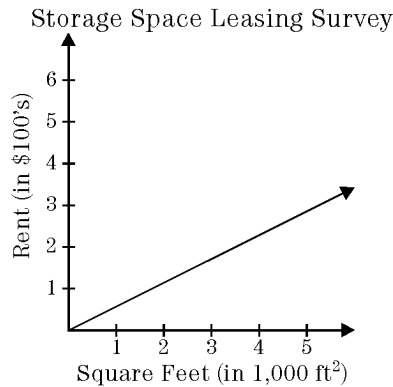
d) The number of bathing suits bought from January to December recorded monthly.

e) Delivery of new textbooks from March to October recorded monthly.

8. At 6:00 am, the temperature is 68°F in Raleigh on a June morning. By 11:00 am, the temperature is 98°F. Find the average rate of change in temperature over the five hour period.

- a) $-\frac{6}{5}$ F°/hr b) $-\frac{5}{6}$ F°/hr c) $\frac{5}{6}$ F°/hr
 d) $\frac{6}{5}$ F°/hr e) 6 F°/hr

9. Which of the following *best* describes the slope of the line ($m = \frac{1}{2}$)?



- a) For every 1,000 ft², there is an increase of \$200.
 b) For every 1,000 ft², there is a decrease of \$200.
 c) For every 2,000 ft², there is a decrease of \$100.
 d) For every 2,000 ft², there is an increase of \$100.
 e) For every 2,000 ft², there is an increase of \$200.

10. The base of loading ramp of a ship was 28 meters from the ship and the top of the ramp was 3 meters above the dock. After the tide changed, the base of the ramp was 27 meters from the ship and the top of the ramp was 8 meters above the dock. How did the slope of the ramp change?

- a) The slope is unchanged.
 b) The slope was steeper before the tide change.
 c) The slope was steeper after the tide change.
 d) There is no slope involved.
 e) Cannot be determined.

11. The set of data represents the cost to ship packages of varying weights through the United States Postal Service. What equation would *best* represent the data if the first column is x and y is the cost in dollars for the weight in that row?

Weight (ounces)	Rate (dollars)
0 Not over 1	0.32
1 Over 1 but not over 2	0.55
2 Over 2 but not over 3	0.78
3 Over 3 but not over 4	1.01
4 Over 4 but not over 5	1.24
5 Over 5 but not over 6	1.47
6 Over 6 but not over 7	1.70
7 Over 7 but not over 8	1.93
8 Over 8 but not over 9	2.16
9 Over 9 but not over 10	2.39
10 Over 10 but not over 11	2.62

- a) $y = 0.32x + 0.23$ b) $y = 0.23x + 0.32$
 c) $y = 1.7x - 2.62$ d) $y = 2.62x - 1.7$
 e) $y = 1.93x + 2.39$

12. A study was done in Raleigh, North Carolina on the amount of time that children spend outside compared to the temperature. Here is the data that was collected. Once graphed, the equation of it's line of best fit is found to be $ADT = 0.085NMT - 2.3$. According to this equation, what would be the average daily time to the nearest quarter of an hour that children spend outside in July if the normal monthly temperature is 78°?

Month	Average Daily Time Children Spend Outside (ADT)	Normal Monthly Temperature (NMT)
Jan	1.00 hour	39
Feb	1.25 hours	42
Mar	2.00 hours	50
Apr	2.75 hours	59
May	3.50 hours	67
Jun	4.00 hours	74

- a) 3.75 hours b) 4.25 hours c) 4.50 hours
 d) 4.75 hours e) 5.00 hours

Answer List

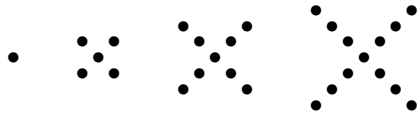
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|-------|-------|-------|
| 1. b | 2. a | 3. a |
| 4. e | 5. c | 6. d |
| 7. c | 8. e | 9. d |
| 10. c | 11. b | 12. b |
-

Catalog List

- | | | |
|---------------|---------------|---------------|
| 1. NC3 JB 11 | 2. NC3 JB 23 | 3. NC3 JB 29 |
| 4. NC3 JB 35 | 5. NC3 JB 41 | 6. NC3 EA 7 |
| 7. NC3 EA 10 | 8. NC3 JC 4 | 9. NC3 JC 7 |
| 10. NC3 JC 16 | 11. NC3 JC 23 | 12. NC3 JC 33 |

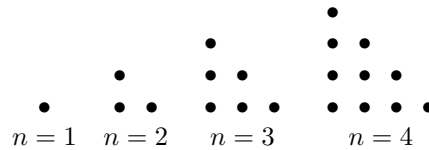
Sequence and Patterns

1. Give a formula for the number of dots in the n th figure in this sequence.



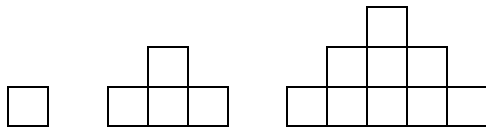
- a) $4n - 3$ b) $n^2 - 2n$ c) $2n + 1$
 d) $4(n - 1)$ e) $\frac{1}{2}n(n - 1)$

2. How many dots will be in the tenth figure ($n = 10$) of the sequence shown?



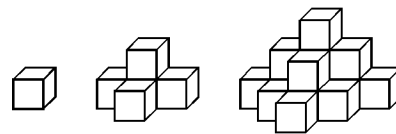
- a) 19 b) 20 c) 50 d) 55 e) 100

3. Give a formula for the number of squares in the n th object if the pattern continues.



- a) $2n - 1$ b) $\frac{1}{2}(n - 1)$ c) $n(n + 1)$
 d) $n^2 - n$ e) n^2

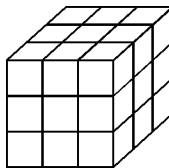
4. How many cubes will be in the next figure if the pattern continues?



- a) 16 b) 18 c) 20 d) 25 e) 30

5. A cube is constructed using 27 smaller cubes as shown. The six faces of the large cube are painted and the large cube is then separated into the smaller squares. How many of the smaller squares have exactly three painted sides?

- a) 4 b) 6 c) 8
 d) 20 e) 21



6. An $n \times n \times n$ cube is constructed of $1 \times 1 \times 1$ cubes. The faces of the large cube are then painted. Which of the following formulas can be used to find the number of smaller cubes that have exactly 2 painted sides?

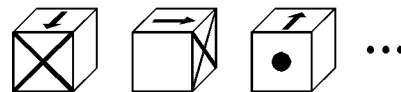
- a) $(n - 2)^3$ b) n^3 c) $12(n - 2)$
 d) $6n^2$ e) $12n$

7. What is the sum of the numbers in Row 7 of Pascal's Triangle?

- a) 35 b) 70
 c) 111 d) 128
 e) 136

Row 0	→	1
Row 1	→	1 1
Row 2	→	1 2 1
Row 3	→	1 3 3 1
Row 4	→	1 4 6 4 1

8. What will be the next object in this sequence?



- a) b) c)
 d) e)

Answer List

- | | | |
|------|------|------|
| 1. a | 2. d | 3. e |
| 4. e | 5. c | 6. c |
| 7. d | 8. d | |
-

Catalog List

- | | | |
|--------------|--------------|--------------|
| 1. NC3 AE 4 | 2. NC3 AE 6 | 3. NC3 AE 11 |
| 4. NC3 AE 15 | 5. NC3 AE 17 | 6. NC3 AE 25 |
| 7. NC3 AE 27 | 8. NC3 AE 32 | |

Algebra I
End of Course Review

Name _____

Date _____

1. Express $\frac{360,000,000}{12,500}$ in scientific notation.

- a) 2.88×10^4 b) 2.88×10^{12} c) 2.88×10^{32} d) 28.8×10^3 e) 28.8×10^{11}

2. Simplify: $\frac{\sqrt{288}}{\sqrt{3}}$

- a) $24\sqrt{2}$ b) $4\sqrt{6}$ c) $8\sqrt{6}$ d) $16\sqrt{6}$ e) $2\sqrt{24}$

3. Given the formula $A = 2\pi r(r + h)$, solve for h .

- a) $h = \frac{A - 2\pi r^2}{2\pi r}$ b) $h = \frac{A - r}{2\pi r}$ c) $h = A(2\pi r^2) - r$ d) $h = A(2\pi r) - r$ e) $h = A(2\pi)$

4. A square truck bed has an area of 64 ft^2 . What are the dimensions of the largest sheet of metal that can lie flat in the truck bed.

- a) $4 \text{ ft} \times 4 \text{ ft}$ b) $6 \text{ ft} \times 6 \text{ ft}$ c) $8 \text{ ft} \times 8 \text{ ft}$ d) $2 \text{ ft} \times 32 \text{ ft}$ e) $1 \text{ ft} \times 64 \text{ ft}$

5. Solve: $|7x + 2| = 4 - x$

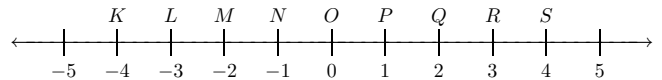
- a) -1 only b) -1 or $\frac{1}{4}$ c) $-\frac{1}{4}$ or 1 d) $\frac{1}{4}$ only e) \emptyset

6. Solve: $3x + 7 < 21$ if $x \in \{3, 4, 5, 6, 7, 8, 9\}$

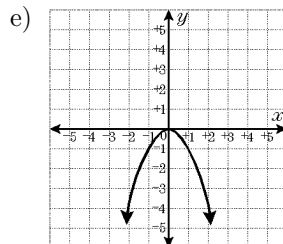
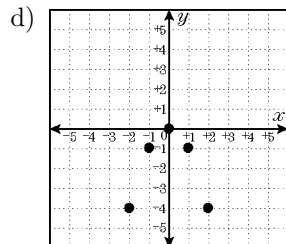
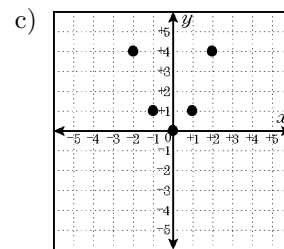
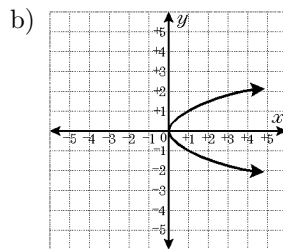
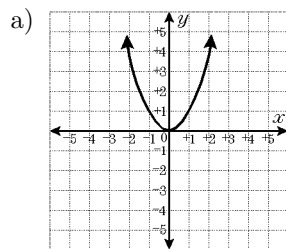
- a) $\{3\}$ b) $\{3, 4\}$ c) $\{5, 6, 7, 8, 9\}$ d) $\{4, 5, 6, 7, 8, 9\}$ e) $\{3, 4, 5, 6, 7, 8, 9\}$

7. -1.32 is located between which of the letters on the number line shown?

- a) L and M b) M and N c) N and O
d) O and P e) P and Q



8. Which is the graph of $y = -x^2$ when $x \in \{-2, -1, 0, 1, 2\}$?



9. The sum of two numbers is 45. The difference of the two numbers is 13. Find the smaller number.
- a) 16 b) 18 c) 27 d) 29 e) 32
10. Simplify: $(5s^3t + 3s^2t^2 - 4st^3) - (s^3t + 8s^2t^2 - 6st^3)$
- a) $4s^3t + 11s^2t^2 - 10st^3$ b) $4s^3t - 11s^2t^2 + 2st^3$ c) $4s^3t - 5s^2t^2 + 2st^3$
d) $6s^3t - 5s^2t^2 + 2st^3$ e) $6s^3t + 11s^2t^2 - 10st^3$
11. Simplify: $\frac{-100w^{5y}}{25w^{10}}$
- a) $-75w^{2y}$ b) $-4w^{2y}$ c) $-125w^{2y}$ d) $-125w^{5y} - 10$ e) $-4w^{5y-10}$
12. Factor completely: $36k^6 - 27k^3$
- a) $9k^3(4k^2 - 3)$ b) $9k(4k^5 - 3k^2)$ c) $27k(9k^5 - k^2)$ d) $27k^3(9k^3 - 1)$ e) $9k^3(4k^3 - 3)$
13. Factor: $s^2 - 5s - 84$
- a) $(s - 12)(s + 7)$ b) $(s + 6)(s - 14)$ c) $(s - 12)(s - 7)$ d) $(s + 4)(s - 21)$ e) $(s + 12)(s - 7)$
14. A pool 7.5 feet deep is to be drained using a small hose. The hose can drain 1.5 feet of water every hour. How much time will it take to drain the pool?
- a) 5 hours b) 6 hours c) 7 hours d) 9 hours e) 11.25 hours
15. A baseball glove that sold for \$50 last year costs 10% more this year. What is the cost of the glove this year?
- a) \$40 b) \$45 c) \$55 d) \$60 e) \$75
16. On the graph of $y = x^2 - 6x + 8$, what is the *smallest* value of y ?
- a) -6 b) -2 c) -1 d) 2 e) 4
17. Solve: $d(6d - 18) = 0$
- a) 0 or 3 b) 6 or -18 c) 6 or -3 d) d or 3 e) d or -6 or 3
18. Solve: $x^2 - 10x = 20$
- a) $\{-5 + 5\sqrt{3}, -5 - 5\sqrt{3}\}$ b) $\{-5 + 3\sqrt{5}, -5 - 3\sqrt{5}\}$ c) $\{5 + 3\sqrt{5}, 5 - 3\sqrt{5}\}$
d) $\{5 + 5\sqrt{3}, 5 - 5\sqrt{3}\}$ e) $\{0, 5\}$
19. A school has a classroom with a length eight feet less than twice the width. If a group of parents purchased 400 square feet of carpet for the room, what is the *approximate* length of the room?
- a) 12.3 ft b) 16.3 ft c) 24.6 ft d) 26.6 ft e) 30.6 ft
20. Translate into an expression.
- An initial patch of molds in a laboratory covers 5 cm^2 . The area of the patch is increasing at a rate of 12% per day. What will be the area of the patch after 8 days?
- a) $12(1 - 0.05)^8$ b) $5(1 + 0.12)^8$ c) $12(1 + 0.08)^5$ d) $5(1 - 0.12)^8$ e) $12(1 + 0.08)^5$

Answer List

- | | | |
|-------|-------|-------|
| 1. a | 2. b | 3. a |
| 4. c | 5. b | 6. b |
| 7. b | 8. d | 9. a |
| 10. c | 11. e | 12. e |
| 13. a | 14. a | 15. c |
| 16. c | 17. a | 18. c |
| 19. c | 20. b | |
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Catalog List

- | | | |
|---------------|---------------|---------------|
| 1. NC3 BB 14 | 2. NC3 BD 47 | 3. NC3 CD 8 |
| 4. NC3 CE 8 | 5. NC3 CF 22 | 6. NC3 CH 8 |
| 7. NC3 DA 6 | 8. NC3 DC 20 | 9. NC3 FD 1 |
| 10. NC3 GA 29 | 11. NC3 GD 16 | 12. NC3 GE 12 |
| 13. NC3 GG 8 | 14. NC3 HC 8 | 15. NC3 HC 26 |
| 16. NC3 IA 89 | 17. NC3 IB 18 | 18. NC3 IC 28 |
| 19. NC3 ID 13 | 20. NC3 IE 28 | |