

Algebra 1 GMAS Practice

1. Which function represents this sequence?

$a_n = a_1 \cdot r^{n-1} \rightarrow$ Explicit Geometric

n	1	2	3	4	5	...
a_n	6	18	54	162	486	...

- A. $f(n) = 3^{n-1}$
- B. $f(n) = 6^{n-1}$
- C. $f(n) = 3(6^{n-1})$
- D. $f(n) = 6(3^{n-1})$

\uparrow
 $a_1 = 6 \quad r = 3$
 $a_n = 6(3)^{n-1}$

Solutions:

- 1. D
- 2. D

2. The points (0, 1), (1, 5), (2, 25), and (3, 125) are on the graph of a function. Which equation represents that function?

- A. $f(x) = 2^x$
- B. $f(x) = 3^x$
- C. $f(x) = 4^x$
- D. $f(x) = 5^x$

$x \mid 0 \mid 1 \mid 2 \mid 3 \mid \dots$
 $y \mid 1 \mid 5 \mid 25 \mid 125 \mid \dots$
 \uparrow
 y-int $a=1$ $b=5$

$y = 1(5)^x$
 $y = 5^x$

geometric \rightarrow exponential function

$y = ab^x$
 \uparrow y-int \nearrow ratio

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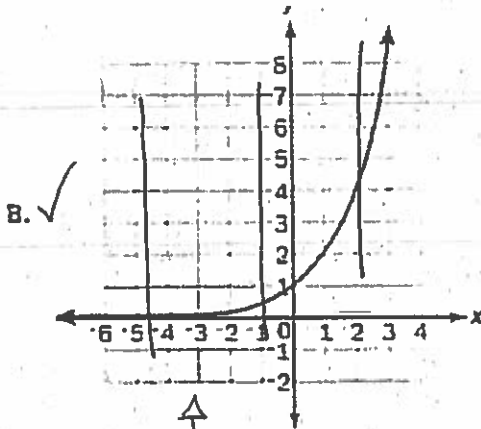
each input has exactly one output

Which of these is NOT a function?

A. (5, 3), (6, 4), (7, 3), (8, 4)

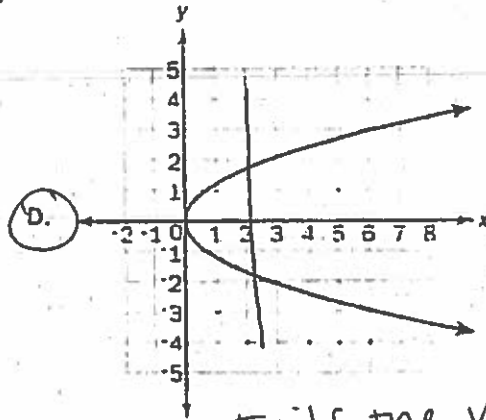
5
6
7
8
3
4

C. $y = 3x^2$



B. ✓

passes the vertical line test



D.

Fails the vertical line test

1. Look at the radical.

$$-8\sqrt{726}$$

What is a rewritten form of the radical?

- A. $-88\sqrt{6}$
- B. -90.75
- C. $-986\sqrt{6}$
- D. $-2,904$

$$-8 \cdot \sqrt{121} \cdot \sqrt{6}$$

$$-8 \cdot 11 \cdot \sqrt{6}$$

$$-88\sqrt{6}$$

2. Look at the expression.

$$2\sqrt{8} \cdot \sqrt{20}$$

Which of these is equivalent to this expression?

- A. $2\sqrt{28}$
- B. 5
- C. $8\sqrt{10}$
- D. $32\sqrt{10}$

$$2\sqrt{160}$$

$$2 \cdot \sqrt{16} \cdot \sqrt{10}$$

$$2 \cdot 4 \cdot \sqrt{10}$$

$$8\sqrt{10}$$

3. Which sum is rational?

- A. $\pi + 18 = \pi + 18$
- B. $\sqrt{25} + 1.75 = 5 + 1.75 = 6.75$
- C. $\sqrt{3} + 5.5 = \sqrt{3} + 5.5$
- D. $\pi + \sqrt{2} = \pi + \sqrt{2}$

4. Which product is irrational?

- A. $\sqrt{2} \cdot \sqrt{50} = \sqrt{100} = 10$
- B. $\sqrt{64} \cdot \sqrt{4} = 8 \cdot 2 = 16$
- C. $\sqrt{9} \cdot \sqrt{49} = 3 \cdot 7 = 21$
- D. $\sqrt{10} \cdot \sqrt{8} = \sqrt{80}$

Solutions:

- 1. A
- 2. C
- 3. B
- 4. D

kilo hecto deca **Basic** deci centi milli
 Unit \uparrow \uparrow

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1. A rectangle has a length of 12 meters and a width of 400 centimeters. What is the perimeter, in cm, of the rectangle?

- A. 824 cm
- B. 1,600 cm**
- C. 2,000 cm
- D. 3,200 cm

$$12m \rightarrow 12.00 \rightarrow 1,200cm$$

$$1200 + 400 =$$

$$+1200 + 400 = 3,200cm$$

Correct Answer: **B**

2. Jill swam 200 meters in 2 minutes 42 seconds. If each lap is 50 meters long, which is MOST LIKELY to be her time, in seconds, per lap?

$$\frac{2min | 60sec}{1min} = 120 sec$$

- A. 32 seconds
- B. 40 seconds**
- C. 48 seconds
- D. 60 seconds

Correct Answer: **B**

$$\frac{162 sec | 50m}{200m | 1 lap} = \frac{8100}{200} = 40.5 sec/lap$$

3. For what values of x is the inequality $\frac{2}{3} + \frac{x}{3} > 1$ true?

- A. $x < 1$
- B. $x > 1$**
- C. $x < 5$
- D. $x > 5$

$$\frac{2}{3} + \frac{x}{3} > 1$$

$$\xrightarrow{(-2) \frac{2+x}{3} > 1(3)} \frac{2+x}{3} > 1(3)$$

$$\xrightarrow{-2 \quad +2} \frac{2+x-2}{3} > 3-2$$

$$\frac{x}{3} > 1$$

$$\text{Circled Answer: } x > 3$$

Correct Answer: **B**

4. Look at the steps used when solving $3(x - 2) = 3$ for x .

$3(x - 2) = 3$	Write the original equation.
$3x - 6 = 3$	Use the Distributive Property.
$3x - 6 + 6 = 3 + 6$	Step 1
$3x = 9$	Step 2
$\frac{3x}{3} = \frac{9}{3}$	Step 3
$x = 3$	Step 4

Which step is the result of combining like terms?

- A. Step 1
- B. Step 2**
- C. Step 3
- D. Step 4

1. In which expression is the coefficient of term "n" - 1?

A. $3n^2 + 4n - 1$

B. $-n^2 + 5n + 4$

C. $-2n^2 - n + 5 \rightarrow -1n$

D. $4n^2 + n - 5$

Correct Answer: **C**

2. The expression s^2 is used to calculate the area of a square, where s is the side length of the square. What does the expression $(8x)^2$ represent?

A. the area of a square with a side length of 8

B. the area of a square with a side length of 16

C. the area of a square with a side length of $4x$

D. the area of a square with a side length of $8x$

$$\sqrt{s^2} = (8x)^2$$

$$s = 8x$$

Correct Answer: **D**

1. What is the product of $7x - 4$ and $8x + 5$?

A. $15x + 1$

B. $30x + 2$

C. $56x^2 + 3x - 20$

D. $56x^2 - 3x + 20$

multiply
↑

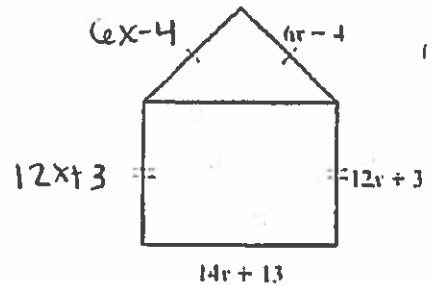
$$(7x-4)(8x+5)$$

$$56x^2 + 35x - 32x - 20$$

$$56x^2 + 3x - 20$$

Correct Answer: **C**

2. A model of a house is shown.



3. Which expression has the same value as the expression $(8x^2 + 2x - 6) - (5x^2 - 3x + 2)$?

A. $3x^2 - x - 4$

B. $3x^2 + 5x - 8$

C. $13x^2 - x - 8$

D. $13x^2 - 5x - 4$

$$8x^2 + 2x - 6 - 5x^2 + 3x - 2$$

$$3x^2 + 5x - 8$$

Correct Answer: **B**

What is the perimeter, in units, of the model?

A. $32x + 12$ units

B. $46x + 25$ units

C. $50x + 11$ units

D. $64x + 24$ units

$$(12x+3) + (12x+3) + (14x+13) + (6x-4) + (6x-4)$$

$$24x + 6 + 14x + 13 + 12x - 8$$

$$50x + 11$$

Correct Answer: **C**

1. This equation can be used to find h , the number of hours it will take Flo and Bryan to mow their lawn.

$$\frac{2}{3} \cdot \frac{h}{3} + \frac{h}{6} = 1$$

$$\frac{2h}{6} + \frac{h}{6} = 1 \rightarrow \frac{3h}{6} = 1 \rightarrow \frac{3h}{3} = \frac{6}{3} \rightarrow h = 2$$

How many hours will it take them to mow their lawn?

- A. 6 hours
- B. 3 hours
- C. 2 hours
- D. 1 hour

Correct Answer C

2. A ferry boat carries passengers back and forth between two communities on the Peachville River.

- It takes 30 minutes longer for the ferry to make the trip upstream than downstream.
- The ferry's average speed in still water is 15 miles per hour.
- The river's current is usually 5 miles per hour.

This equation can be used to determine how many miles apart the two communities are.

$$\frac{m}{15-5} = \frac{m}{15+5} + 0.5$$

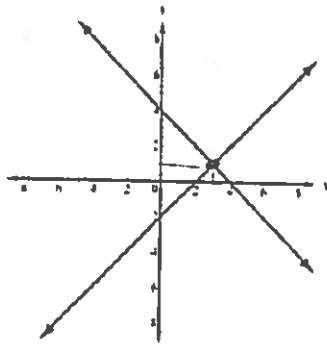
What is m , the distance between the two communities?

- A. 0.5 mile
- B. 5 miles
- C. 10 miles
- D. 15 miles

plug in each number and see which one makes the equation true.

Correct Answer C

Two lines are graphed on this coordinate plane.



2. Based on the tables, at what point do the lines $y = -x + 5$ and $y = 2x - 1$ intersect?

$y = -x + 5$	
x	y
-1	6
0	5
1	4
2	3
3	2

$y = 2x - 1$	
x	y
-1	-3
0	-1
1	1
2	3
3	5

- A. (1, 1)
- B. (3, 5)
- C. (2, 3)
- D. (3, 2)

Which point appears to be a solution of the equations of both lines

- A. (0, -2)
- B. (0, 4)
- C. (2, 0)
- D. (3, 1)

Correct Answer C

Correct Answer D

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3. Look at the tables of values for two linear functions, $f(x)$ and $g(x)$.

-1	16
0	7
1	4
3	-2
5	-8
7	-14

-1	-18
0	-14
1	-10
3	-2
5	6
7	14

What is the solution to $f(x) = g(x)$?

Solution:

$(3, -2)$ $x=3, y=-2$

4. Which ordered pair is a solution of $3y + 2 = 2x - 5$?

- A. (-5, 2)
- B. (0, -5)
- C. (3, 1)
- D. (7, 5)

$3(1) + 2 = 2(3) - 5$
 $3 + 2 = 6 - 5$
 $5 = 5 \checkmark$

Explanation of correct answer: The correct answer is choice (C) (3, 1). Also, if the values of x and y are substituted into the equation, the statement becomes $5 = 5$, which is a true statement. This shows that the ordered pair is a solution of the equation.

5. A manager is comparing the cost of buying baseball caps from two different companies.

- Company X charges a \$50 fee plus \$7 per baseball cap.
- Company Y charges a \$30 fee plus \$9 per baseball cap.

For what number of baseball caps will the cost be the same at both companies?

- A. 10
- B. 20
- C. 40
- D. 100

$x: 50 + 7x = 50 + 7(10) = 120$
 $y: 30 + 9x = 30 + 9(10) = 120$

Correct Answer: A

6. A shop sells one-pound bags of peanuts for \$2 and three-pound bags of peanuts for \$5. If 9 bags are purchased for a total cost of \$36, how many three-pound bags were purchased?

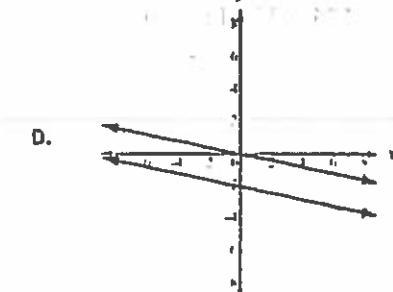
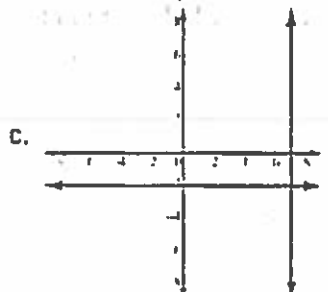
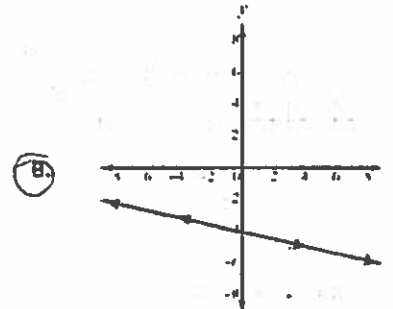
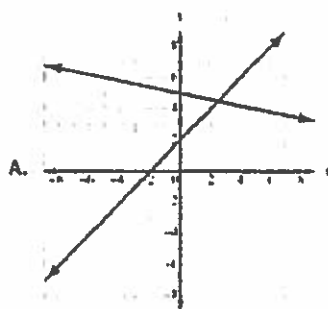
- A. 3
- B. 6
- C. 9
- D. 18

Correct Answer:

$-2(x + y = 9)$
 $2x + 5y = 36$
 $-2x + 2y = -18$

 $3y = 18$
 $\frac{3y}{3} = \frac{18}{3}$
 $y = 6$

7. Which graph represents a system of linear equations that has multiple common coordinate pairs?



1. Which function represents the sequence?

n	1	2	3	4	5	...
a_n	3	10	17	24	31	...

- A. $f(n) = n + 3$
 - B. $f(n) = 7n - 4$
 - C. $f(n) = 3n + 7$
 - D. $f(n) = n + 7$
- plug in values of n*

2. Each week, Tim wants to increase the number of sit-ups he does daily by 2 sit-ups. The first week, he does 15 sit-ups each day.

Write an explicit function in the form $f(n) = mn + b$ to represent the number of sit-ups, $f(n)$, Tim does daily in week n .

Correct Answer: C

Solution:

$m = 2$ (slope, rate of change)
 $b = 15$ (starting amount)
 $f(n) = 2n + 15$

1. Look at the sequence in this table.

n	1	2	3	4	5	...
a_n	-1	1	3	5	7	...

arithmetic
 $d = 2$

Which function represents the sequence?

- A. $a_n = a_{n-1} + 1$
- B. $a_n = a_{n-1} + 2$
- C. $a_n = 2a_{n-1} - 1$
- D. $a_n = 2a_{n-1} - 3$

2. Consider this pattern.



Arithmetic, d=3

Which function represents the sequence that represents the pattern?

- A. $a_n = a_{n-1} - 3$
- B. $a_n = a_{n-1} + 3$
- C. $a_n = 3a_{n-1} - 3$
- D. $a_n = 3a_{n-1} + 3$

Correct Answer: B

Correct Answer: B

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3. Which function is modeled in this table?

x	$f(x)$
1	8
2	11
3	14
4	17

- A. $f(x) = x + 7$
- B. $f(x) = x + 9$
- C. $f(x) = 2x + 5$
- D. $f(x) = 3x + 5$

Correct Answer: D

4. Which explicit formula describes the pattern in this table?

d	C
2	6.25
3	9.42
5	15.70
10	31.40

- A. $d = 3.14 \times C$
- B. $3.14 \times C = d$
- C. $31.4 \times 10 = C$
- D. $C = 3.14 \times d$

Correct Answer: D

5. If $f(12) = 4(12) - 20$, which function gives $f(x)$?

- A. $f(x) = 4x$
- B. $f(x) = 12x$
- C. $f(x) = 4x - 20$
- D. $f(x) = 12x - 20$

Correct Answer: C

1. A wild horse runs at a rate of 8 miles an hour for 6 hours. Let y be the distance, in miles, the horse travels for a given amount of time, x , in hours. This situation can be modeled by a function.

Which of these describes the domain of the function?

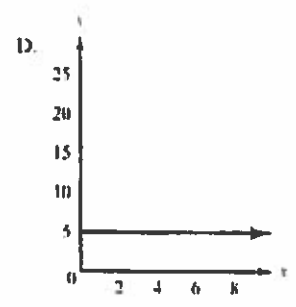
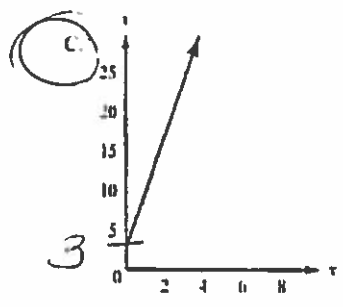
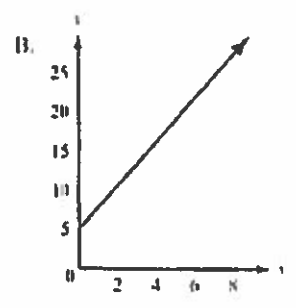
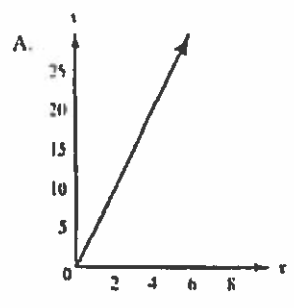
- A. $0 \leq x \leq 6$
- B. $0 \leq y \leq 6$
- C. $0 \leq x \leq 48$
- D. $0 \leq y \leq 48$

↳ Set of all input (x) values

Correct Answer: A

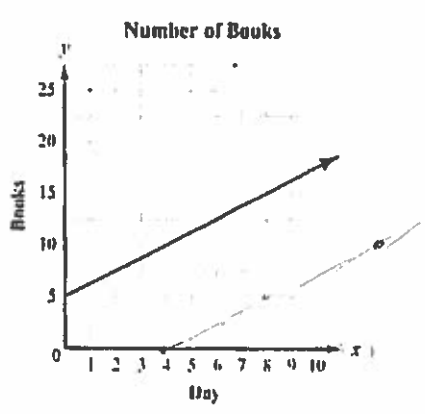
$n=3$ $m=5$

1. To rent a canoe, the cost is \$3 for the oars and life preserver, plus \$5 on hour for the canoe. Which graph models the cost of renting a canoe?



Correct Answer: C

2. Juan and Patti decided to see who could read more books in a month. They began to keep track after Patti had already read 5 books that month. This graph shows the number of books Patti read for the next 10 days and the rate at which she will read for the rest of the month.



If Juan does not read any books before day 4 and he starts reading at the same rate as Patti for the rest of the month, how many books will he have read by day 12?

- A. 5
- B. 10
- C. 15
- D. 20

Correct Answer: B

1. Which expression is equivalent to $\sqrt{121x^2 - 64y^2}$?
- A. $(11x - 16y)(11x + 16y)$
 B. $(11x - 16y)(11x - 16y)$
 C. $(11x + 8y)(11x + 8y)$
 D. $(11x + 8y)(11x - 8y)$
- $11x \quad 8y$
 $(11x - 8y)(11x + 8y)$

Correct Answer: D

2. What is a common factor for the expression $24x^2 + 16x + 144$?
- A. 16
 B. 8x
 C. $3x^2 + 2x + 18$
 D. $8(x - 2)(3x^2 + 9)$
- $8(3x^2 + 2x + 18)$

Correct Answer:

3. Which of these shows the complete factorization of $6x^2y^2 - 9xy - 42$?
- A. $3(2xy^2 - 7)(xy^2 + 2)$
 B. $(3xy + 6)(2xy - 7)$
 C. $3(2xy - 7)(xy + 2)$
 D. $(3xy^2 + 6)(2xy^2 - 7)$
- $3(2x^2y^2 - 3xy - 14)$

Correct Answer:

Example of a Box-n-Whisker Plot

