

Topic: Associative property

Question: Which of these equations best represents the associative property of addition?

Answer choices:

A $(a + b) + c = a + (b + c)$

B $a + b + c = a + c + b$

C $a + b + c = b + a + c$

D $a(b + c) = ab + ac$



Solution: A

Answer choice A is the associative property of addition, $(a + b) + c = a + (b + c)$. Order doesn't matter when adding three or more numbers. The other answer choices are properties we'll learn about later in this section.



Topic: Associative property**Question:** The associative property of addition tells you that:**Answer choices:**

- A $(4 + 3) + 2 = 4 + (3 + 2)$
- B $4 + 3 + 2 = 4 + 2 + 3$
- C $4 + 3 + 2 = 3 + 4 + 2$
- D $4(3 + 2) = (4)(3) + (4)(2)$



Solution: A

Answer choice A illustrates the associative property of addition, which tells us that, when we're doing addition, we can group terms together in any order we'd like, and the answer will still be the same.



Topic: Associative property**Question:** Which equation shows the associative property for addition?**Answer choices:**

- A $(x + y) + 2z = x + y + 2z$
- B $x + (y + 2z) = (x + y) + 2z$
- C $x + y + 2z = (x + 2z) + y$
- D $x + (y + 2z) = (x + y) + 2z$



Solution: D

The associative property has to do with different ways of grouping terms

Answer choice A shows no grouping on the right, so rule out A.

Answer choice B shows a parenthesis error on the right side: two left parentheses, but only one right parenthesis. Rule out B.

Answer choice C shows no grouping on the left. Also, y and $2z$ are in a different order on the right. Rule out C.

Answer choice D correctly shows grouping one pair of terms, $(y + 2z)$, on the left and a different pair of terms, $(x + y)$, on the right.



Topic: Identifying multiplication**Question:** Which of these is multiplication?**Answer choices:**

- A $3 \times 2 = 6$
- B $3 \cdot 2 = 6$
- C $(3)(2) = 6$
- D All of these



Solution: D

Answer choices A, B, and C all indicate multiplication.



Topic: Identifying multiplication**Question:** Simplify the expression.

$$(3 \times 2 \cdot 2)(4) \times 2$$

Answer choices:

- A 48
- B 96
- C 24
- D 12



Solution: B

We need to identify every operation in this expression as multiplication, because the parentheses, the \times symbol, and the \cdot symbol all indicate multiplication. So we'll perform one multiplication at a time. Remember that when it comes to multiplication, the order doesn't matter.

$$(3 \times 2 \cdot 2)(4) \times 2$$

$$(6 \cdot 2)(4) \times 2$$

$$(12)(4) \times 2$$

$$48 \times 2$$

$$96$$



Topic: Identifying multiplication**Question:** Simplify this expression.

$$3(-7) - 5 + 2 \times 6 - 3 + 4 \cdot 5$$

Answer choices:

- A 23
- B 3
- C -9
- D -76



Solution: B

To simplify

$$3(-7) - 5 + 2 \times 6 - 3 + 4 \cdot 5$$

group the multiplications in brackets.

$$[3(-7)] - 5 + [2 \times 6] - 3 + [4 \cdot 5]$$

$$[-21] - 5 + [12] - 3 + [20]$$

Group positives, group negatives and add. The brackets can be dropped.

$$12 + 20 - 21 - 5 - 3$$

$$32 - 29$$

$$3$$





Algebra 1

Final Exam

Algebra 1 Final Exam

This exam is comprehensive over the entire course and includes 12 questions. You have 60 minutes to complete the exam.

The exam is worth 100 points. The 8 multiple choice questions are worth 5 points each (40 points total) and the 4 free response questions are worth 15 points each (60 points total).

Mark your multiple choice answers on this cover page. For the free response questions, show your work and make sure to circle your final answer.

1. (5 pts)

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> E
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

2. (5 pts)

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> E
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

3. (5 pts)

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> E
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

4. (5 pts)

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> E
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

5. (5 pts)

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> E
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

6. (5 pts)

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> E
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

7. (5 pts)

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> E
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

8. (5 pts)

<input type="checkbox"/> A	<input type="checkbox"/> B	<input type="checkbox"/> C	<input type="checkbox"/> D	<input type="checkbox"/> E
----------------------------	----------------------------	----------------------------	----------------------------	----------------------------

1. (5 pts) Use the distributive property to expand the expression.

$$\frac{2x}{yz} \left(\frac{4x}{3y} - \frac{x^2}{z} \right)$$

A $\frac{16x^2}{3yz} - \frac{2x^2}{yz}$

C $\frac{8x^2}{3y^2z} + \frac{2x^3}{yz^2}$

E $\frac{8x^2}{3y^2z} - \frac{2x^3}{yz^2}$

B $\frac{2x^2}{3y^2z} - \frac{2x^3}{yz^2}$

D $\frac{8x^2}{3y^3z} - \frac{2x^3}{yz^3}$

2. (5 pts) Which property is illustrated by $3 \cdot (4 \cdot 2) = 3 \cdot (2 \cdot 4)$?

A Commutative property

D Transitive property

B Associative property

E Distributive property

C Identity property

3. (5 pts) Translate “three less than the quotient of six and a number” to a math expression.

A $3 - \frac{6}{x}$

C $\frac{6}{x} - 3$

E $\frac{6}{x} + 3$

B $3 - 6x$

D $6x - 3$

4. (5 pts) Solve $-(4x - 10) + 14 = 2(4x - 6)$.

A -1

C $\frac{3}{4}$

E 3

B $-\frac{1}{4}$

D 2



5. (5 pts) What is the domain of the function $f(x) = 3\sqrt{x}$?

A $(-\infty, 3) \cup (3, \infty)$

B $[0, \infty)$

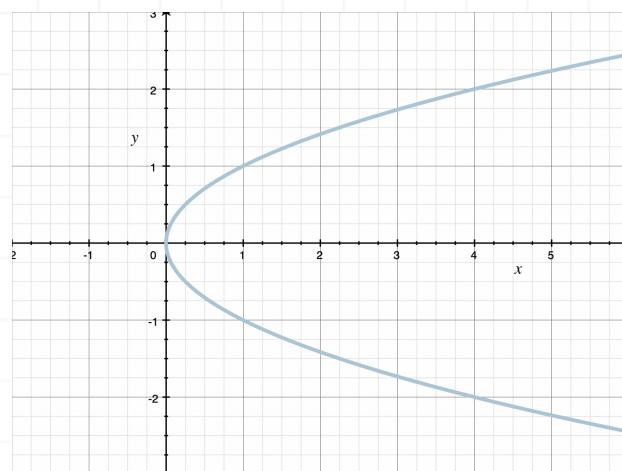
C $(-\infty, 0] \cup [0, \infty)$

D $(-\infty, -3) \cup (-3, \infty)$

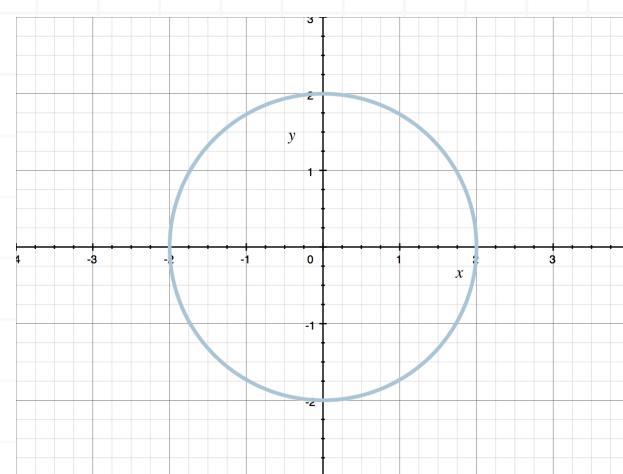
E $(-\infty, 0]$



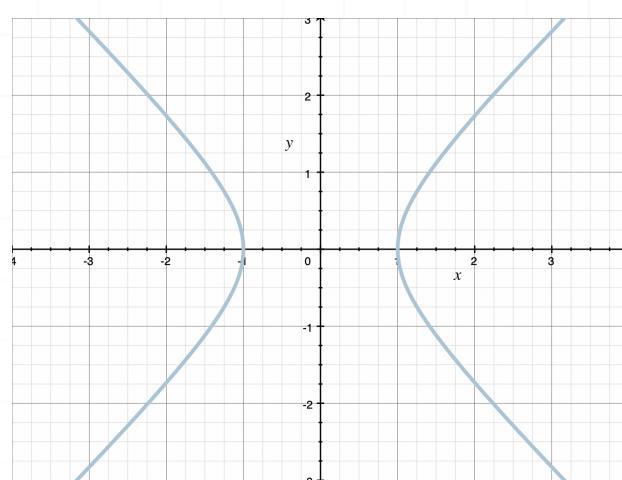
6. (5 pts) Which graph represents a function?



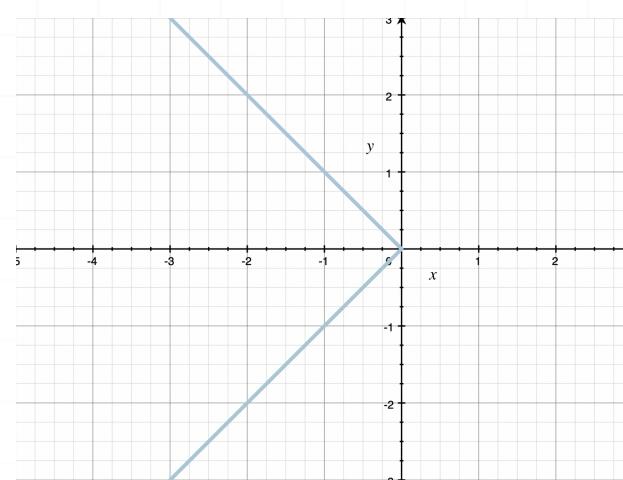
A



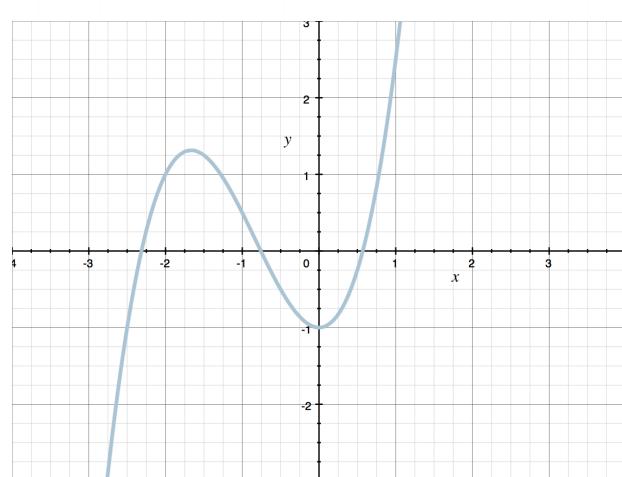
D



B



E



C

7. (5 pts) Solve $5 - 4x \leq 13$.

A $x \geq 8$

C $x \leq -8$

E $x \geq 2$

B $x \leq 2$

D $x \geq -2$

8. (5 pts) Find $(fg)(-3)$ if $f(x) = x - 3$ and $g(x) = 2x + 5$.

A -15

C -3

E 7

B -6

D 6



9. (15 pts) Simplify the expression by combining the two fractions.

$$\frac{3}{x+5} + \frac{6}{x^2 + 2x - 15}$$

10. (15 pts) Solve the system of equations.

$$4x + 6y = 15$$

$$x = 6 - 6y$$



11. (15 pts) Find the solutions of $x^2 + 14x - 32 = 0$ by factoring.

12. (15 pts) Graph the linear inequality $-x - y > x - 5$.

