

Strand: Algebra

Performance Indicator: 7.A.04 - Solve multi-step equations by combining like terms, using the distributive property, or moving variables to one side of the equation

Year: 2006 Grade: 8 Item: 11

11 Reneé must solve the equation  $4x + 12 = 6x$ . If she subtracts  $4x$  from the left side of the equation, what should Reneé write on the right side of the equation?

- A 2
- B  $2x$
- C 10
- D  $10x$

Year: 2006 Grade: 8 Item: 18

18 Omar wants to solve the equation  $3x - 2 = 10$ . Which steps could Omar follow to find the solution?

- F Add 2 to both sides. Then divide both sides by 3.
- G Divide both sides by 3. Then add 2 to both sides.
- H Subtract 2 from both sides. Then divide both sides by 3.
- J Multiply both sides by 3. Then subtract 2 from both sides.

Year: 2006 Grade: 8 Item: 24

24 Katie converts the outside temperature from degrees Fahrenheit,  $F$ , to degrees Celsius,  $C$ . She uses the formula below to convert the temperature.

$$(F - 32)\frac{5}{9} = C$$

If the outside temperature is 50 degrees Fahrenheit, what is the outside temperature in degrees Celsius?

- F 2
- G 5
- H 9
- J 10

Year: 2006    Grade: 8    Item: 31

**31** Solve for  $x$  in the equation below.

$$2(3x - 4) - 7 = 3x + 1 + x$$

*Show your work.*

*Answer* \_\_\_\_\_

On the lines below, explain how to use the distributive property to help you solve this equation.

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Year: 2006    Grade: 8    Item: 38

**38** Solve for  $y$  in the equation below.

$$-2y + 11 = -6y + 35$$

*Show your work.*

*Answer* \_\_\_\_\_

Year: 2006    Grade: 8    Item: 41

**41** Solve for  $x$  in the equation below.

$$8(2x - 3) = -16$$

*Show your work.*

*Answer* \_\_\_\_\_

Year: 2007 Grade: 8 Item: 5

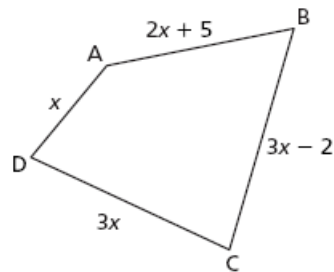
5 What value of  $x$  makes the equation below true?

$$\frac{x+3}{2} = 8$$

- A 1
- B 5
- C 13
- D 19

Year: 2007 Grade: 8 Item: 30

30 In the figure ABCD shown below, the total length of the sides equals 84 inches.



[not drawn to scale]

Find the length of side  $\overline{BC}$ .

*Show your work.*

**Answer** \_\_\_\_\_ inches

Year: 2007    Grade: 8    Item: 45

- 45 Shawna compares the prices to download music from two different web sites.

<p><b>New Tunes</b> \$5.00 sign-up fee \$0.75 per song</p>	<p><b>New Music</b> \$9.00 sign-up fee \$0.50 per song</p>
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Shawna wrote the equation below to determine when the two plans will cost the same. She uses  $s$  to represent the number of songs.

$$0.75s + 5 = 0.50s + 9$$

What number of songs must be downloaded for both music plans to cost the same?

*Show your work.*

**Answer** \_\_\_\_\_ songs

Year: 2008    Grade: 8    Item: 16

- 16 Find the value of  $x$  in the equation below.

$$3(x + 2) = x$$

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

Year: 2009    Grade: 8    Item: 6

Solve the equation below for  $x$ .

$$2(6 + 2x) = 8x$$

- A  $x = 1$
- B  $x = 2$
- C  $x = 3$
- D  $x = 6$

Year: 2009    Grade: 8    Item: 32

Solve the equation below for  $p$ .

$$3(p + 6) = 5p + 4$$

*Show your work.*

*Answer*  $p =$  \_\_\_\_\_

Check your answer.

*Show your work.*

Year: 2009    Grade: 8    Item: 45

What is the solution of the equation below?

$$4(x + 5) = x + 8$$

*Show your work.*

*Answer*  $x =$  \_\_\_\_\_

Check to see if your answer is correct.

*Show your work.*

Year: 2010 Grade: 8 Item: 9

**9** Solve the equation below for  $x$ .

$$9(x - 5) = 4x - 5$$

- A 8
- B 10
- C -8
- D -10

Year: 2010 Grade: 7 Item: 10

**10** Find the value of  $a$  in the equation below.

$$3a + 2 = a - 6$$

- A 4
- B 2
- C -2
- D -4

Year: 2010 Grade: 8 Item: 34

**34** Solve the equation below for  $x$ .

$$20x + 5x - 20 = 21x + 4$$

*Show your work.*

*Answer*  $x =$  \_\_\_\_\_

Year: Sample Test Grade: 8 Item: 8

**8** Bill and Felicia each bake cookies for a party. Bill bakes 3 times as many cookies as Felicia. Felicia bakes 24 fewer cookies than Bill. Bill bakes  $b$  cookies and Felicia bakes  $f$  cookies. What pair of equations can be used to determine the number of cookies Bill and Felicia bake?

- F  $b = 3(f + 24)$   
 $f = b - 24$
- G  $b = 3f$   
 $f = 24 - b$
- H  $b = 3f$   
 $f = b - 24$
- J  $f = 3b$   
 $b = f - 24$

Year: Sample Test      Grade: 8      Item: 24

**24** The square of a number,  $n$ , is equal to the sum of that number and 5. Which equation represents this relationship?

- F  $2n = n + 5$
- G  $n^2 = n + 5$
- H  $2n = n - 5$
- J  $(n + 5)^2 = n + 5$

Year: Sample Test      Grade: 8      Item: 33

**33** Noel and Renaldo want to rent bikes with two other friends. They have \$150 to spend on bike rentals. The sign below shows the bike rental rates.

**BIKE RENTALS**

- Rent 1 bike for \$9.75 per hour.

**Special Group Rate**

- For groups of 4 or more, save \$3.00 per person.

All rates include tax.

Based on the information on the sign, the equation below can be used to determine the number of hours,  $h$ , the 4 friends can rent bikes with \$150.

$$4(9.75h - 3) = 150$$

**Part A**

Noel says they have enough money to rent the bikes for a maximum of 3 hours. Solve the equation for the number of hours,  $h$ , in order to determine whether Noel is correct.

*Show your work.*

**Answer** \_\_\_\_\_ hours

**Part B**

On the lines below, explain whether Noel is correct.

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**39** Juanita solved an equation incorrectly, as shown below.

$$3x + 6 = 24$$

$$\frac{3x}{3} + 6 = \frac{24}{3}$$

$$x + 6 = 8$$

$$x = 2$$

**Part A**

On the lines below, explain in words the mistake Juanita made.

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**Part B**

Solve the equation  $3x + 6 = 24$  correctly.

**Show your work.**

**Answer** \_\_\_\_\_