

Solve simple linear equations, including those which involve expanding the expressions using the distributive property. CCSS.MATH.CONTENT.8.EE.C.7.B | G8M4C21E1

**You've defeated the ghosts on the phantom ship. While returning with the treasure chest, you lose your way. Help your team of exterminators to navigate and reach home.**

- 1** In order to set sail, you need to expand the given expression. Write your answer in the boxes given below.

$$4(a + 8) = \boxed{\phantom{00}} \times a + 4 \times \boxed{\phantom{00}} \quad (\text{Using distributive property})$$

$$= \boxed{\phantom{00}} a + \boxed{\phantom{00}} \boxed{\phantom{00}}$$



- 2** In the equation,  $5(s - 4) + 3s = 2(5 + s) - 4s$ , "s" represents the number of islands that come in your way while sailing back home. Solve the equation. Expand both sides of the equation using distributive property and write your answer in the boxes given below.

$$\boxed{\phantom{00}} s - \boxed{\phantom{00}} \boxed{\phantom{00}} + 3s = \boxed{\phantom{00}} \boxed{\phantom{00}} + \boxed{\phantom{00}} s - 4s$$

Rearrange the like terms and check the correct box for the equation obtained.



$$5s + 3s - 2s + 4s = 10 + 20$$



$$5s + 3s + 2s - 4s = 10 + 20$$



$$5s + 3s - 2s + 4s = 10 - 20$$

Simplify the expression. Write your answer in the given boxes.



s =



Divide by 10 on both sides and circle the value obtained for the number of islands (s).

10

3

6

5



Solve simple linear equations, including those which involve expanding the expressions using the distributive property. CCSS.MATH.CONTENT.8.EE.C.7.B | G8M4C21E1

**3**

In the equation,  $\frac{28}{7} = \frac{N-5}{10}$ , "N" represents the angle (in degrees) by which you have to steer the ship to get back on the right route. Follow the steps given below to solve the given equation and find the value of "N".

Step 1:

Cross multiply the terms and multiply the factors using distributive property. Check the correct box for the equation obtained.


☐

$280 = 7N + 35$

☐

$280 = 7N - 35$

☐

$280 = 7N + 45$

Step 2:

Group the like terms and write the angle by which the ship has to be steered, in the given box.

--	--

**4**

In the equation,  $\frac{t-11}{4} = \frac{t-4}{11}$ , "t" represents the time taken (in h) to sail from the phantom ship back home. Follow the steps and simplify the expression.

Step 1:

Cross multiply the terms in the denominator with the terms in the numerator on LHS and RHS. Circle the correct option.

$11(t - 11) = 4(t - 4)$

$4(t - 11) = 11(t - 4)$

$11(t - 11) = 1(t - 4)$

Step 2:

Multiply the factors using distributive property. Write the expression in the boxes given below.

$11t - \begin{array}{|c|c|c|} \hline & & \\ \hline \end{array} = \begin{array}{|c|} \hline \\ \hline \end{array} t - \begin{array}{|c|c|} \hline & \\ \hline \end{array}$

Step 3:

Group the like terms and simplify the equation. Write your answer in the boxes given below.

The time taken to get back home from the phantom ship is

--	--

h.



Solve simple linear equations, including those which involve expanding the expressions using the distributive property. CCSS.MATH.CONTENT.8.EE.C.7.B | G8M4C21E1

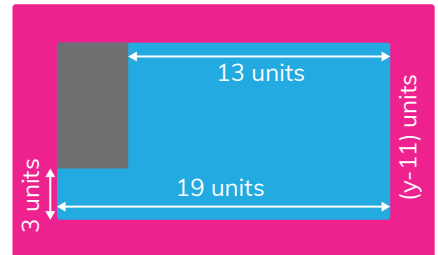
After returning home, you have to share all the information about the treasure from the lost phantom ship with the public. Let's go through the details.

1

You found an exotic painting along with the treasure. Some area in the corner of the painting has faded as shown in the figure. Find the expression for the faded area so that you can recreate it. Write your answer in the boxes given below.

The length of the faded part is

$$y - 11 - \boxed{\phantom{00}} = y - \boxed{\phantom{00}} \boxed{\phantom{00}} \text{ units}$$



The breadth of the faded part is

$$\boxed{\phantom{00}} \boxed{\phantom{00}} - \boxed{\phantom{00}} \boxed{\phantom{00}} = \boxed{\phantom{00}} \text{ units}$$

$$\text{Area} = \text{Length} \times \text{Breadth} = \boxed{\phantom{00}} y - \boxed{\phantom{00}} \boxed{\phantom{00}} \text{ sq units}$$



2

You realize that the number of gold coins (G) in the treasure chest is related to the number of rubies (R) by the equation,  $8(R + 3) = G$ . If the chest has 100 rubies, then check the number of gold coins in it.

Step 1:

Substitute the value of rubies and apply distributive property. Write the correct expression in the boxes given below.

$$\boxed{\phantom{00}} \times 100 + 8 \times \boxed{\phantom{00}} = G$$

$$\boxed{\phantom{00}} \boxed{\phantom{00}} \boxed{\phantom{00}} + \boxed{\phantom{00}} \boxed{\phantom{00}} = G$$



Step 2:

Simplify and check the box for the correct number of gold coins.

☐ 814

☐ 824

☐ 924

☐ 914


Solve simple linear equations, including those which involve expanding the expressions using the distributive property. CCSS.MATH.CONTENT.8.EE.C.7.B | G8M4C21E1

**3** The number of diamonds in the treasure chest is given by “x” in the equation

$\frac{2}{3}(x - 6) + 4 = \frac{5}{6}(3 - x) + 11$ . Follow the steps below to find the number of diamonds and write your answer in the boxes given below.

Step 1:

Take LCM as 6 and multiply your factors using distributive property. Check the correct box.

☐  $4x - 24 + 34$   
 $= 15 - 5x + 66$

☐  $4x - 24 + 24$   
 $= 15 - 5x + 66$

☐  $4x - 24 + 24$   
 $= 15 - 5x - 66$

Step 2:

Separate the like terms and write your answer in the boxes given below.

$\times$  +   $\times$  =    
The number of diamonds in the box is



**4** The phantom ship was “w” years old, 15 years ago. Find the current age of the ship by using the equation:  $\sqrt{\frac{2}{5}w + 8} = \sqrt{\frac{7}{15}w - 4}$

**Hint:** To remove square root, square both sides.

Step 1:

Squaring both sides of the equation, we get \_\_\_\_\_. Circle the correct expression.

$\frac{2}{5}w + 8 = \frac{15}{7}w - 4$

$\frac{2}{5}w + 8 = \frac{7}{15}w - 4$

$\frac{5}{2}w + 8 = \frac{7}{15}w - 4$

Step 2:

Take 15 as the LCM and bring the common terms to one side. Check the correct expression.

☐  $7w - 6w$   
 $= 120 - 60$

☐  $7w - 6w$   
 $= 180 - 60$

☐  $7w - 6w$   
 $= 120 + 60$

Step 3:

Age of the ship (w) =

+ 15 =    years



Solve simple linear equations, including those which involve expanding the expressions using the distributive property. CCSS.MATH.CONTENT.8.EE.C.7.B | G8M4C21E1

**You and your team want to build a new ship by selling off some of the gold from the treasure. Let's build a ship similar to the lost phantom ship.**

The phantom ship has two big masts. You realise that you don't have the actual measurements of the masts, but don't worry! One of your teammates noted the dimensions in the form of linear equations. All you have to do is find the measurements of the masts by solving these linear equations.

The linear equation to find the length  $m_1$  (in yd) of the first mast is given below. Follow the guideline to choose the value of the constant "a" in the equation. Write your answer in these boxes given below.

**Guideline:**

- The value of "a" should be a multiple of 7 less than 50.

The linear equation for  $m_1$ :

$$a - 2m_1 = 7(a + 4) - 9m_1$$

Substituting the chosen value of "a" in the equation, we get:

$$\boxed{\phantom{00}}\boxed{\phantom{00}} - 2m_1 = 7(\boxed{\phantom{00}}\boxed{\phantom{00}} + 4) - 9m_1$$

**Step 1:**

Multiply the factors using distributive property.

$$\boxed{\phantom{00}}\boxed{\phantom{00}} - 2m_1 = \boxed{\phantom{00}}\boxed{\phantom{00}}\boxed{\phantom{00}} + 28 - 9m_1$$

**Step 2:**

Separate the like terms.

$$-2m_1 + 9m_1 = \boxed{\phantom{00}}\boxed{\phantom{00}}\boxed{\phantom{00}} + 28 - \boxed{\phantom{00}}\boxed{\phantom{00}}$$

On simplifying further, we get:  $7m_1 =$

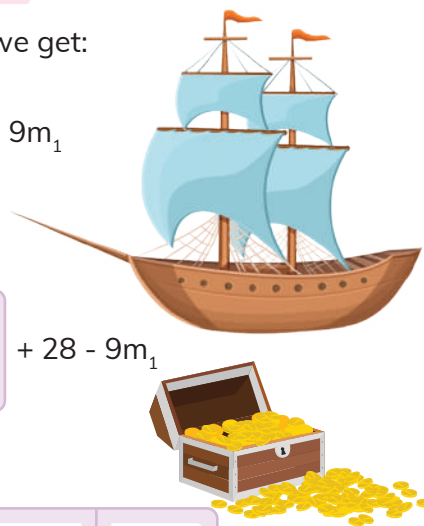
$$\boxed{\phantom{00}}\boxed{\phantom{00}}\boxed{\phantom{00}}$$

**Step 3:**

Divide both sides by 7.

The length of the first mast ( $m_1$ ) is  $\boxed{\phantom{00}}\boxed{\phantom{00}}$  yd.

Masts of a ship



Solve simple linear equations, including those which involve expanding the expressions using the distributive property. CCSS.MATH.CONTENT.8.EE.C.7.B | G8M4C21E1

Similarly, the linear equation to find the length  $m_2$  (in yd) of the second mast is given below. Follow the guideline to choose the value of the constant “b” in the equation. Write your answer in the boxes given below.

**Guideline:**

The value of “b” should be a multiple of 4 less than 20.

The linear equation for  $m_2$ :  
 $\frac{1}{2}(4m_1 - 12) + 2 = b - m_1 + m_2$

Substituting the chosen value of “b” in the equation, we get:

$$\frac{1}{2}(4m_1 - 12) + 2 = \boxed{\phantom{00}} \boxed{\phantom{00}} - m_1 + m_2$$

**Step 1:**

Multiply the factors using distributive property.

$$2m_1 - \boxed{\phantom{00}} + 2 = \boxed{\phantom{00}} \boxed{\phantom{00}} - m_1 + m_2$$

**Step 2:**

Simplify the constant terms on LHS side.

$$2m_1 - \boxed{\phantom{00}} = \boxed{\phantom{00}} \boxed{\phantom{00}} - m_1 + m_2$$

**Step 3:**

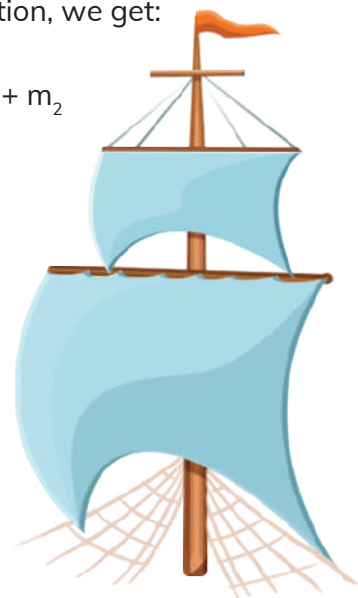
Substitute the value of m

$$\boxed{\phantom{00}} \boxed{\phantom{00}} - 4 = \boxed{\phantom{00}} \boxed{\phantom{00}} - \boxed{\phantom{00}} \boxed{\phantom{00}} + m_2$$

**Step 4:**

Separate the common terms and simplify the equation to get the value of m

The length of the second mast ( $m_2$ ) is  $\boxed{\phantom{00}} \boxed{\phantom{00}}$  yd.



Great! The ship you built with these masts look exactly like the lost phantom ship. You and your team of ghost exterminators can sail in this beauty for your future missions.

