Equation or Expression?

An **equation** is a mathematical sentence which states that one or more quantities are equal. Equations have an equal sign with values on both sides to show they are equal. An **expression** is a mathematical sentence that does not have an equal sign.

Equation = 3 + n = 21

Expression = 3y + 2

Questions | Is the number sentence an <u>expression</u> or <u>equation</u>?

1) $10 + 10 = 20$

Expression   Equation

2) $25 + y$

Expression   Equation

3) $3y + 8 = 17$

Expression   Equation

4) $2n + 5$

Expression   Equation

5) $8 - 4 + n = 10$

Expression   Equation

6) $17 - 7 + n$

Expression   Equation

7) $12 \div 4 = 3$

Expression   Equation

8) $56 \div y = 8$

Expression   Equation

9) $100 \div n + 3$

Expression   Equation

10) $\dfrac{25}{n} + 10 = 15$

Expression   Equation

11) $\dfrac{40}{n} - 8$

Expression   Equation

12) $65 + 3 - n \div 10$

Expression   Equation

Evaluating Algebraic Expressions - Addition

Part 1	Evaluate the following expressions for *x* = 8

1) $x + 12$	2) $8 + x$	3) $23 + x$	4) $x + 24$
5) $41 + x$	6) $63 + x$	7) $82 + 13 + x$	8) $92 + x + 11$

Part 2	Evaluate the following expressions for *y* = 8 and *n* = –2

1) $y + (n)$	2) $5 + (n) + y$	3) $22 + y + (n)$	4) $y + 12 + (n)$
5) $43 + y + (n)$	6) $(n) + y + 20$	7) $y + (n) + 11$	8) $53 + (n) + y$

Part 3	Evaluate the following expressions for *x* = –5 and *p* = 5

1) $(x) + (p) - 10$	2) $10 + (x) + (p)$	3) $15 + (x) + (p)$	4) $(x) + 11 + (p)$
5) $(p) + 20 + (x)$	6) $(x) + 18 + (p)$	7) $(x) + 5 + (p)$	8) $22 + (p) + (x)$

Evaluating Algebraic Expressions - Subtraction

Subtraction Integers Rules

To subtract integers, it is easiest to change the operation to addition and then follow the addition rules. We can do this by using the rule – Keep, Flip, Change. We keep the first number the same, flip the operation from subtraction to addition, and then change the third number's sign.

Example: 5 – (–6) = ? becomes   5   +   6   = 11

Keep the first integer   **Flip** the operation   **Change** the sign of the next integer

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Part 1	Evaluate the following expressions for $x = 5$

1) $x – 12$	2) $8 – x$	3) $23 – x$	4) $x – 24$
5) $41 – x$	6) $63 – x$	7) $82 – 13 – x$	8) $92 – x – 11$

Part 2	Evaluate the following expressions for $y = 10$ and $n = –3$

1) $y – (n)$	2) $11 – (n) – y$	3) $15 – y – (n)$	4) $y – 6 – (n)$
5) $21 – y – (n)$	6) $(n) – y – 13$	7) $y – (n) – 3$	8) $32 – (n) – y$

Evaluating Algebraic Expressions - Café

Whitney works at a café selling muffins, coffee, tea, and scones. She uses algebraic expressions to determine the cost of her customer's orders.

Menu	
Scone (*s*)	$3.50
Muffin (*m*)	$2.25
Tea (*t*)	$2.00
Coffee (*c*)	$2.50

Solve Write the algebraic expression and then evaluate using the menu prices

Customer Order	Expression	Answer
1) 2 coffees, 1 muffin	2 x *c* + m 2 x 2.50 + 2.25	
2) 3 teas, 1 scone		
3) 4 coffees, 2 teas		
4) 2 coffees, 2 teas, 2 muffins		
5) 3 teas, 4 muffins, 2 scones		
6) 10 coffees, 10 muffins		
7) 5 teas, 3 muffins, 2 scones		
8) 3 coffees, 3 scones		

Evaluating Algebraic Expressions - (x ÷)

Part 1	Evaluate for x = 3. Use brackets to separate the numbers

1) 5x	2) 9x	3) 3x	4) 8x + 6
5) 21x + 8	6) 12x – 12	7) 5x – x	8) 9x + 8 – x

Part 2	Evaluate the following expressions for y = 10

1) $\frac{y}{2}$	2) $\frac{30}{y}$	3) $\frac{70}{y}$	4) $\frac{y}{5} + 5$
5) $\frac{30}{y} + 8$	6) $\frac{100}{y} + y$	7) $\frac{120}{y} - 9$	8) $\frac{y}{y}$ x y

Part 3	Write the expressions using the values/operations below 9 8 4 n + x – ÷

1) Nine times a number, add four	
2) Eight divided by four, subtract a number	
3) A number multiplied by eight, add nine	
4) Eight more than four divided by a number	
5) A number divided by nine, add eight	

Evaluating Algebraic Expressions

Part 1	Evaluate the following expressions for x = 6

1) x + 16	2) 10x	3) 63 – x	4) x ÷ 2
5) 24 ÷ x	6) 12x	7) 4x – x	8) 12 ÷ x + 8

Part 2	Evaluate the following expressions for y = 8 and n = 3

1) y + n + 22	2) 5n + y	3) 78 – y + n	4) y ÷ 8 + n
5) 40 ÷ y + 5	6) 11n + y	7) yn + 15	8) 60 ÷ n + y

Part 3	Evaluate the following expressions for x = 10 and p = 5

1) x + p – 10	2) 10x + (2p)	3) 60 ÷ x – p	4) x + 9 + (3p)
5) 20 ÷ p + (5x)	6) 9x + (18 – p)	7) 6x – 5p	8) 8p + 3x

Writing Equations

An equation is a statement that two expressions are equal. An expression has no equal sign, whereas an equation has an equal sign. When we can solve the answer to an expression, it becomes an equation because we add an equal sign.

Expression	**Equation**
Eight more than a number 8 + n n = ?	Eight more than a number is 14 8 + n = 14 n = 6

Part 1	Write equations for each sentence

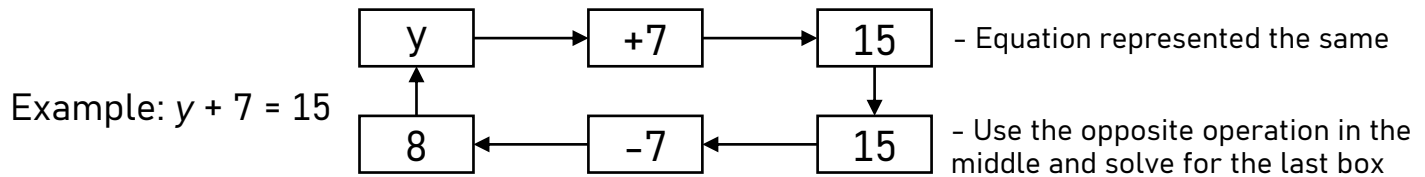| Sentence	Equation	Answer
1) Nine less than a number is 11		
2) Fifteen more than a number is 22		
3) Eight times a number is 24		
4) Twelve divided by a number is three		
5) A number plus eight divided by two is 10		
6) Seven times a number plus four is 39		

Part 2	Write a sentence in words for each equation

Equation	Sentence	Value of n
1) $4n = 24$		
2) $8 + n - 3 = 10$		
3) $5 + \dfrac{12}{n} = 7$		
4) $3n - 3 = 12$		

Adding and Subtracting Equations - Flow Chart

We can use a reverse flow chart to calculate the value of a variable in an equation.

| y | → | +7 | → | 15 | – Equation represented the same |

Example: $y + 7 = 15$

| 8 | ← | -7 | ← | 15 | – Use the opposite operation in the middle and solve for the last box |

Directions | Use the flow chart to find the value of the variable

---

1) $t - 3 = 10$

| t | → | –3 | → | 10 |
| | ← | +3 | ← | 10 |

71) $t - 7 = 13$

| t | → | –7 | → | 13 |
| | ← | +7 | ← | 13 |

---

2) $r - 5 = 8$

| r | → | –5 | → | 8 |
| | ← | +5 | ← | 8 |

8) $r + 4 = 22$

| r | → | +4 | → | 22 |
| | ← | –4 | ← | 22 |

---

3) $c + 6 = 12$

| c | → | +6 | → | 12 |
| | ← | –6 | ← | 12 |

9) $c - 9 = 26$

| c | → | –9 | → | 26 |
| | ← | +9 | ← | 26 |

---

4) $b + 5 = 16$

| b | → | +5 | → | 16 |
| | ← | –5 | ← | 16 |

10) $b + 11 = 31$

| b | → | +11 | → | 31 |
| | ← | –11 | ← | 31 |

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5) $p - 7 = 19$

| p | → | –7 | → | 19 |
| | ← | +7 | ← | 19 |

11) $p + 13 = 23$

| p | → | +13 | → | 23 |
| | ← | –13 | ← | 23 |

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6) $x + 9 = 14$

| x | → | +9 | → | 14 |
| | ← | –9 | ← | 14 |

12) $x - 15 = 27$

| x | → | –15 | → | 27 |
| | ← | +15 | ← | 27 |

Adding and Subtracting Equations - Flow Chart

Steps to fill in a flow chart:

1) Write the variable in the first box
2) Write the second value in the second box
3) Write the answer in the third box
4) We are working in reverse now. Write the answer in the first box
5) We do the opposite to the next box as we did with the second box
6) Fill in the last box to find the value of the variable, which it points to

Example: $t - 7 = 13$

| t | → | –7 | → | 13 |

| | ← | +7 | ← | 13 |

Directions | Fill in the blank in the flow chart

1) $t - 5 = 11$

6) $t - 11 = 23$

2) $r - 8 = 13$

7) $r + 14 = 27$

3) $c + 4 = 13$

8) $c - 19 = 33$

4) $b + 6 = 18$

9) $b + 24 = 39$

5) $p - 9 = 21$

10) $p + 32 = 41$

Adding and Subtracting Equations - Flow Chart

Directions	Fill in the blank in the flow chart

1) $t - 7 + 9 = 15$	t → -7 → $+9$ → 15 13 ← $+7$ ← -9 ← 15
2) $r + 8 - 6 = 9$	
3) $c + 5 - 8 = 13$	
4) $b - 11 + 7 = 19$	
5) $p - 9 + 10 = 14$	
6) $c + 4 - 11 = 4$	
7) $b + 6 + 8 = 21$	
8) $p - 7 - 11 = 21$	

Addition - Are They Equal?

Are the equations equal? Put a slash through the equal sign for any equations that are not equal.

8 + 4 = 12   23 + 15 ≠ 36   47 + 13 = 50

Part 1	Put a slash through the equal sign (≠) if it is not balanced

1) 63 + 7 = 70	2) 51 + 15 = 67	3) 47 + 13 = 50
4) 65 + 12 = 77	5) 74 + 13 = 87	6) 92 + 11 = 103
7) 95 + 25 = 110	8) 121 + 17 = 138	9) 144 + 17 = 171
10) 155 + 26 = 181	11) 12 + 144 = 158	12) 212 + 12 = 224

Part 2	Fill in the missing number to balance the equation

1) ☐ + 12 = 95	2) ☐ + 25 = 50	3) ☐ + 59 = 66
4) 72 + 14 = ☐	5) 64 + ☐ = 80	6) ☐ + 50 = 65
7) 68 + ☐ = 82	8) 83 + 15 = ☐	9) 89 + ☐ = 102
10) 105 + ☐ = 116	11) 121 + 14 = ☐	12) 145 + ☐ = 160

Addition – Find the Variable

When we write an algebraic expression with an equal sign, it becomes an equation. An equation is a statement that two expressions are equal.

We can solve for a variable by balancing an equation, making sure both sides of the equal sign have the same value.

Part 1   Find out the value of the variable

|		
1) $12 + n = 18$ $n =$	2) $n + 15 = 22$ $n =$	3) $32 + n = 41$ $n =$
4) $45 + 17 = p$ $p =$	5) $41 + p = 62$ $p =$	6) $p + 63 = 81$ $p =$
7) $77 + y = 96$ $y =$	8) $y + 20 = 115$ $y =$	9) $132 + 15 = y$ $y =$
10) $157 + t = 192$ $t =$	11) $195 + t = 211$ $t =$	12) $236 + t = 248$ $t =$
13) $123 + a = 243$ $a =$	14) $165 + a = 305$ $a =$	15) $253 + a = 308$ $a =$
16) $238 + 449 = s$ $s =$	17) $311 + n = 445$ $s =$	18) $s + 288 = 400$ $s =$

Part 2   The formula for calculating the perimeter of a shape is to add the side lengths

Use the following equation to find the perimeter of a triangle: $p = a + b + c$

1) a=6 b=12 c=10	P=	4) a=22 b=15 c=41	P=
2) a=7 b=15 c=19	P=	5) a=19 b=32 c=49	P=
3) a=9 b=17 c=23	P=	6) a=25 b=23 c=46	P=
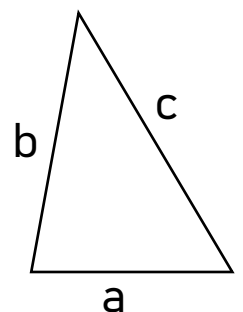
Adding Decimals - Solve the Variable

Practice | Find the value of the variables below

1) 4.5 + n = 6 n =	2) n + 5.5 = 7 n =	3) s + 5.3 = 8 s =
4) 8.5 + 3 = p p =	5) 9.2 + p = 11 p =	6) 10.1 + r = 11.5 r =
7) 15.3 + n = 19 n =	8) n + 16.5 = 20.5 n =	9) t + 14.4 = 18 t =
10) 24.6 + n = 28.2 n =	11) 28.6 + 4 = t t =	12) 31.6 + 5 = p p =

Word Problems | Write the equations below and find the answer

1) Jake has 1.25 pizzas left over from last night. His friend brings over some more pizza. They now have 4.25 pizzas. How much pizza did his friend bring?

2) Kelly is 1.5 meters tall. She hopes to grow to be 1.75 metres tall. How much will she have to grow?

3) Carter has $1.33 but needs $1.88 to buy a bag of chips. How much more does he need?

Subtraction - Are They Equal?

Are the equations equal? Put a slash through the equal sign for any equations that are not equal

$16 - 8 = 8$ $95 - 11 \neq 86$ $105 - 12 = 93$

Part 1   Put a slash through the equal sign if it is not balanced

1) $40 - 5 = 35$	2) $56 - 11 = 45$	3) $59 - 16 = 42$
4) $72 - 11 = 61$	5) $66 - 27 = 49$	6) $79 - 16 = 64$
7) $126 - 20 = 109$	8) $168 - 22 = 144$	9) $174 - 13 = 161$
10) $181 - 15 = 166$	11) $126 - 20 = 109$	12) $195 - 30 = 165$

Part 2   Fill in the missing number to balance the equation

1) $36 - 6 = \boxed{}$	2) $53 - 7 = \boxed{}$	9) $\boxed{} - 7 = 71$
4) $58 - \boxed{} = 45$	5) $48 - \boxed{} = 39$	6) $65 - \boxed{} = 55$
13) $105 - \boxed{} = 99$	17) $146 - 15 = \boxed{}$	11) $91 - \boxed{} = 75$
18) $158 - \boxed{} = 136$	20) $185 - 17 = \boxed{}$	12) $\boxed{} - 12 = 67$

Subtraction - Find the Variable

A **variable** is a letter that represents an unknown number. When we don't know a number, we can use a letter to take the place of the unknown number.

Example: 39 – n = 25

We can figure out the unknown number by balancing the equation. In this equation, n = 14.

Question   Find out the value of the variable

1) 32 – n = 26 n =	2) n – 21 = 35 n =	3) 52 – n = 41 n =
4) 73 – 16 = p p =	5) 64 – p = 53 p =	6) p – 32 = 50 p =
7) 87 – y = 61 y =	8) y – 93 = 13 y =	9) 102 – 13 = y y =
10) 109 – t = 94 t =	11) 124 – t = 101 t =	12) 143 – t = 129 t =
13) 158 – a = 127 a =	14) 174 – a = 142 a =	15) 200 – a = 175 a =

Part 2   Calculate the change a customer gets when they buy something

When a customer buys something, the formula for calculating their change (c) is money given (m) subtract the price (p) of the item. Therefore, <u>c = m – p</u>

m = 20 p = 12	c = <u>20</u> – <u>12</u>	c = <u>8</u>	m = 80 p = 61	c = ___ – ___	c =
m = 40 p = 19	c = ___ – ___	c =	m = 100 p = 68	c = ___ – ___	c =
m = 60 p = 27	c = ___ – ___	c =	m = 100 p = 44	c = ___ – ___	c =

Multiplying Equations - Flow Chart

Steps to fill in a flow chart:

1) Write the variable in the first box
2) Write the second value in the second box
3) Write the answer in the third box
4) We are working in reverse now. Write the answer in the first box
5) We do the opposite to the next box as we did with the second box
6) Fill in the last box to find the value of the variable, which it points to

Example: $7t = 28$

| t | x 7 | 28 |

| 4 | ÷7 | 28 |
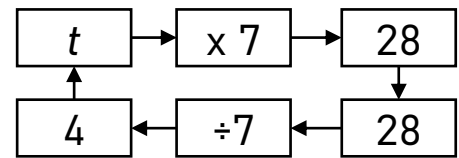
Directions   Fill in the blank in the flow chart

1) $4t = 12$

6) $11t = 77$

2) $8r = 48$

7) $14r = 48$

3) $5c = 35$

8) $7c = 56$

4) $6b = 42$

9) $12b = 144$

5) $9p = 72$

10) $9n = 63$

Multiplying Equations - Flow Chart

Directions   Fill in the blank in the flow chart

1) 7t + 6 = 27	t → x 7 → +6 → 27 3 ← ÷ 7 ← −6 ← 27
2) 8r + 5 = 53	
3) 5c − 8 = 32	
4) 6b + 7 = 31	
5) 4p − 9 = 35	
6) 9c + 4 = 31	
7) 10b + 7 = 67	
8) 8p − 9 = 23	

Multiplication - Find the Variable

When we multiply a number by a variable, we do not need to use the multiplication sign. It is known that any variable next to a number means the operation we are using is multiplication.

Example: 7n = 14 <u>means</u> 7 x n = 14

We can figure out the unknown number by balancing the equation – n = 2.

Part 1	Find out the value of the variable

1) 5n = 10 n =	2) 4n = 16 n =	3) 8(s) = 48 s =
4) 9 x 4 = p p =	5) 5p = 35 p =	6) 7k = 21 k =
7) 3n = 21 n =	8) 6n = 42 n =	9) n x 7 = 77 n =
10) 5n = 45 n =	11) 8 x 7 = t t =	12) 9 x 4 = p p =
13) 8n = 96 n =	14) 10n = 100 n =	15) 7d = 63 d =
16) 9(s) = 27 s =	17) 8 x 8 = s s =	18) 6 x 12 = t t =

Part 2	Calculate the area using the variables for <u>Length</u> and <u>Width</u>

The formula for calculating area is: A = L x W

Calculate the area in the questions below using the values for the variables L and W

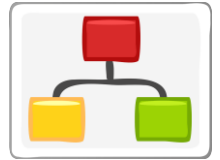|				
L = 3 W = 9	A =		L = 5 W = 9	A =
L = 8 W = 7	A =		L = 11 W = 7	A =
L = 10 W = 11	A =		L = 4 W = 13	A =

Division Equations - Flow Chart

Directions	Fill in the blank in the flow chart

1) $\dfrac{t}{4}$ = 4

| t | → | ÷4 | → | 4 |
| 16 | ← | x 4 | ← | 4 |

7) $\dfrac{t}{11}$ = 7

2) $\dfrac{r}{6}$ = 8

8) $\dfrac{r}{8}$ = 9

3) $\dfrac{c}{3}$ = 9

9) $\dfrac{c}{7}$ = 3

4) $\dfrac{b}{8}$ = 7

10) $\dfrac{b}{12}$ = 4

5) $\dfrac{p}{4}$ = 9

11) $\dfrac{p}{6}$ = 8

6) $\dfrac{n}{7}$ = 3

12) $\dfrac{n}{9}$ = 5

Division Equations - Flow Chart

Directions Fill in the blank in the flow chart

1) $\dfrac{t}{5}$ + 6 = 11	$\boxed{t} \rightarrow \boxed{\div 5} \rightarrow \boxed{+6} \rightarrow \boxed{11}$ $\boxed{25} \leftarrow \boxed{\times 5} \leftarrow \boxed{-6} \leftarrow \boxed{11}$
2) $\dfrac{r}{8}$ – 5 = 2	
3) $\dfrac{c}{4}$ + 8 = 18	
4) $\dfrac{b}{6}$ – 9 = 0	
5) $\dfrac{p}{7}$ – 7 = 2	
6) $\dfrac{n}{3}$ + 12 = 22	
7) $\dfrac{t}{2}$ – 6 = 5	
8) $\dfrac{r}{11}$ + 8 = 15	

Division - Are They Equal?

Are the equations equal? Put a slash through the equal sign for any equations that are not equal

$8 \div 2 \neq 5$ $9 \div 3 = 3$ $15 \div 3 \neq 3$

Part 1	Put a slash through the equal sign if it is not balanced

1) $20 \div 4 = 4$	2) $45 \div 5 = 9$	3) $36 \div 4 = 8$
4) $48 \div 4 = 11$	5) $27 \div 3 = 9$	6) $35 \div 7 = 5$
7) $55 \div 5 = 11$	8) $56 \div 6 = 8$	9) $42 \div 7 = 6$
10) $110 \div 11 = 10$	11) $18 \div 2 = 9$	12) $24 \div 6 = 4$

Part 2	Fill in the missing number to balance the equation

1) $42 \div 6 = \boxed{}$	2) $49 \div 7 = \boxed{}$	3) $24 \div 4 = \boxed{}$
4) $28 \div \boxed{} = 4$	5) $18 \div \boxed{} = 3$	6) $32 \div \boxed{} = 4$
7) $\boxed{} \div 5 = 8$	8) $\boxed{} \div 8 = 7$	9) $\boxed{} \div 4 = 4$
10) $63 \div 7 = \boxed{}$	11) $48 \div \boxed{} = 4$	12) $\boxed{} \div 8 = 9$

Division - Find the Variable

A **variable** is a letter that represents an unknown number. When we don't know a number, we can use a letter to take the place of the unknown number.

Example: $27 \div n = 3$

We can figure out the unknown number by balancing the equation: n = 9.

Part 1	Find out the value of the variable

1) $50 \div n = 5$ n =	2) $n \div 8 = 3$ n =	3) $s \div 4 = 3$ s =
4) $32 \div 4 = p$ p =	5) $28 \div p = 4$ p =	6) $56 \div r = 8$ r =
7) $42 \div n = 6$ n =	8) $n \div 5 = 8$ n =	9) $t \div 11 = 7$ t =
10) $81 \div n = 9$ n =	11) $96 \div 8 = t$ t =	12) $63 \div 9 = p$ p =
13) $64 \div n = 8$ n =	14) $63 \div n = 9$ n =	15) $56 \div s = 7$ s =
16) $28 \div s = 4$ s =	17) $12 \div 4 = s$ s =	18) $65 \div 5 = n$ n =

Part 2	Calculate the area using the variables <u>Length</u> and <u>Width</u>

Servers at a restaurant share tips (*t*) equally at the end of the day. The number of people that share the tips depends on how many servers (*s*) were working. We can use a formula to find out how much money (*m*) each server takes home: $m = t \div s$

t = 150 s = 5	m = 150 ÷ 5	m = 30	t = 180 s = 3	m = ÷	m =
t = 80 s = 4	m = ÷	m =	t = 280 s = 7	m = ÷	m =
t = 200 s = 5	m = ÷	m =	t = 440 s = 4	m = ÷	m =

Using Linear Equations and Pictorial Representations

| Questions	Write a pictorial representation and linear equation of the example

#	Real–World Example	Linear Equation	Pictorial Representation
Ex)	Kennedy has 25 socks. She has an equal number of black and white socks that she keeps in 2 piles. She has 7 randomly coloured socks. How many socks are in each pile?	2p + 7 = 25 p = 9	
1)	Stacy brought 26 cookies to school and gave them all away. She gave 8 to her teachers and 2 to each of her friends. How many friends did she give cookies to?		
2)	Harley earned $42 from her job today after she worked for 2 hours. She received a $10 tip as part of the $42. What does Harley earn per hour at her job?		
3)	You paid $15 for admission to the movies. Snacks were $4 each. If you spent $27 in total, how many snacks did you buy?		
4)	In a basketball game, Henry scored 23 points. This was 5 more than double the points he scored last game. How many points did he score last game?		
5)	Katie and Sam went on an Easter egg hunt. Katie found 24 eggs. Katie found 3 times more eggs than Sam. How many eggs did Sam find?		

Representing Problems with Linear Equations (x + a = b)

Questions | Represent the problems with linear equations (x + a = b) and solve for *x*

1)	Camila had some markers and then bought 24 more. Now she has 56 markers. How many markers did she have before she bought more? Linear equation: _____ *x* =
2)	Carter opened a bank account last year and has been adding to it. Today he added $153. He now has $312. How much did he have before? Linear equation: _____ *x* =
3)	Mia tracks how many steps she takes each day. Before noon, she had taken a lot of steps. From noon until the end of the day, she took 7,450 steps. In total, she took 16,340 steps for the day. How many steps did she take before noon? Linear equation: _____ *x* =
4)	Caleb scored a bunch of points in the first half of a basketball game. In the second half, he only had 7 points. At the end of the game, he finished with 31 points. How many points did he score in the first half? Linear equation: _____ *x* =
5)	Nick's new business sold quite a few products in May. In June, they sold 572 products. In May and June combined, they sold 931 products. How many products did Nick's business sell in May? Linear equation: _____ *x* =
6)	Daniel is going to a friend's house who lives far away. He drove for awhile this morning before stopping for gas. He then drove another 362km before arriving at his friend's house, which was 710km away. How far did he drive before stopping? Linear equation: _____ *x* =
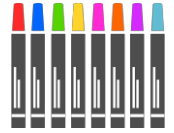
Representing Problems with Linear Equations (ax = b)

Questions | Represent the problems with linear equations (ax = b) and solve for *x*

1) Avery has 4 boxes of cookies. In total, she has 96 cookies. How many cookies are in each box?

Linear equation: _____ *x* =

2) Justin is a football running back. He has played 5 games this season and has 150 yards of rushing. How many yards did he average each game?

Linear equation: _____ *x* =

3) Cooper bought 7 new video games for $280. How much did he spend on average for each video game?

Linear equation: _____ *x* =

4) Kayden gets an allowance each week. After 9 weeks, he made $225 from his allowance. How much is his allowance each week?

Linear equation: _____ *x* =

5) Arya is a rower. Every minute she rows, she pulls a certain number of strokes. After 20 minutes, she had pulled 600 strokes. How many strokes does she average a minute?

Linear equation: _____ *x* =

6) Brooklyn has a job that pays her by the hour. She worked 6 hours today and earned $96. How much money does she earn per hour?

Linear equation: _____ *x* =

Representing Problems with Linear Equations (ax + b = c)

Questions | Represent the problems with linear equations (ax + b = c) and solve for *x*

1) Hunter's cousin is 24 years old. He is 2 years older than twice Hunter's age. How old is Hunter?

Linear equation: *x* =

2) Jesse brought 32 treats to work and gave them all away. She gave 8 to her boss and 2 to each of her friends. How many friends did she give treats to?

Linear equation: *x* =

3) Cindy has $8. Her sister has 3 times as much as her brother. The three of them have $44. How much money does her brother have?

Linear equation: *x* =

4) Dylan went to an amusement park. He had to pay for each ride he went on. He decided to go on 8 rides. He also had to pay $20 to enter the park. In total, it cost him $52 at the amusement park. How much is each ride?

Linear equation: *x* =

5) Carson earned $63 from work today. He worked for 4 hours and received a bonus of $15. How much does he earn per hour?

Linear equation: *x* =

6) Shelly collected 66 treats on Halloween. She went to 15 houses and started with 6 candies at the beginning. How many candies on average did she collect at each house?

Linear equation: *x* =

Representing Problems with Linear Equations (x/a = b)

Questions	Represent the problems with linear equations ($\frac{x}{a}$ = b) and solve for x

1) Claire bought a lot of donuts for her party. She is expecting 32 guests and bought enough for each guest to have 3 donuts. How many donuts did she buy?

Linear equation: x =

2) Everett and his friends earned some money by selling lemonade. They split the money equally between the 6 friends and each got $24. How much total money did they earn?

Linear equation: x =

3) Amara collected some Easter eggs during a hunt. She split her eggs up equally between herself, her sister, and her brother. Each sibling got 36 eggs. How many eggs did she collect in total?

Linear equation: x =

4) David is given some money to spend on vacation. He ended up spending it all during the 5-day vacation, spending $13 each day. How much money was he given?

Linear equation: x =

5) Weston practiced piano for a long time this week. He practiced each day for 44 minutes. How many minutes total did he practice for the week?

Linear equation: x =

6) Declan doesn't have many chocolates left from Valentine's Day. He rationed them out for the next 8 days, allowing himself to eat 13 chocolates each day. How many chocolates did he have left before the 8 days?

Linear equation: x =

Representing Problems with Linear Equations

Questions	Represent the problems with linear equations

1) Dominic went to the movie theatre and paid $13 for admission. Each treat he bought inside was $6. He ended up spending $37 in total. How many treats did he buy?

Linear equation: _____ $x =$

2) Piper has a new job where she worked 20 hours in her first week. She made $400 in total for the week. How much does Piper earn per hour?

Linear equation: _____ $x =$

3) Quinn bought treats for each guest at her party. She is expecting 13 guests and bought enough for each guest to receive 11 treats. How many treats did she buy in total?

Linear equation: _____ $x =$

4) Silas has been saving money for a long time. He earned an extra $132 today and now has a total of $375. How much did Silas have before today?

Linear equation: _____ $x =$

5) Alex earned $89 in total from work today. He worked for 5 hours and received a tip of $9. How much does he earn per hour?

Linear equation: _____ $x =$

6) Micah had 26 points in the 2nd, 3rd, and 4th quarter of today's game. He finished with 39 points. How many points did he have in the first quarter?

Linear equation: _____ $x =$