

Week 15

Thursday 2nd July 2020

**Year 6 Use an Algebraic Rule -
Reasoning and Problem Solving**

Use An Algebraic Rule

1a. Millie is using the rule $2a + 3$.

Harry is using the rule $(a + 3) \times 2$.

Harry says:



Both rules will give the same answer.

Do you agree? Explain your answer.



6 R

Use An Algebraic Rule

1b. Amina is using the rule $a - (a - 2)$.

Tom is using the rule $(2a + 5) - 23$.

Amina says:



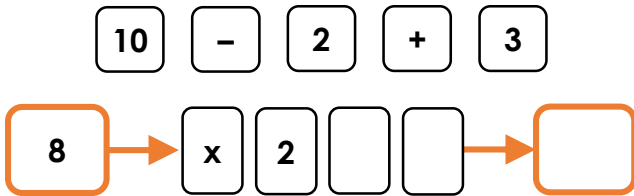
Both rules will give an answer of two when $a = 10$.

Do you agree? Explain your answer.



6 R

2a. Use the cards below to create 3 different algebraic expressions for this function machine.



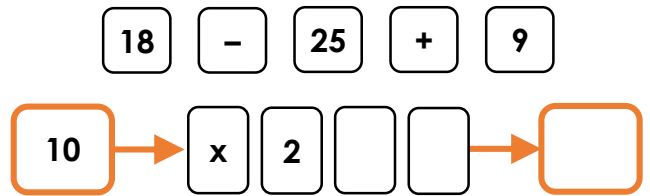
Work out the outputs for each expression.

What is the greatest output you can make?



6 PS

2b. Use the cards below to create 3 different algebraic expressions for this function machine.



Work out the outputs for each expression.

What is the greatest output you can make?



6 PS

3a. True or false?

A two step function machine which has $+10, -9$ as its functions could provide the same output using one step of $+1$.



Explain your answer.



6 R

3b. True or false?

A two step function machine which has $+20, -18$ as its functions could provide the same output using just one step of -2 .



Explain your answer.



6 R

Use An Algebraic Rule

4a. Hafsa is using the rule $3a + 5$.

Jake is using the rule $(a + 5) \times 3$.

Jake says:



Both rules will give the same answer.

Do you agree? Explain your answer.



6 R

Use An Algebraic Rule

4b. Iqra is using the rule $a^2 - (a \times a)$.

Jake is using the rule $(3a + 5a) \times 0$.

Iqra says:



Both rules will give an answer of zero.

Do you agree? Explain your answer.



6 R

5a. Use the cards below to create 4 different algebraic expressions for this function machine.



Work out the outputs for each expression.

What is the greatest output you can make?



6 PS

5b. Use the cards below to create 4 different algebraic expressions for this function machine.



Work out the outputs for each expression.

What is the greatest output you can make?



6 PS

6a. True or false?

A two step function machine which has $+4$, -9 as its functions could provide the same output using just one step.



Explain your answer.



6 R

6b. True or false?

A two step function machine which has $+10$, -5 as its functions could provide the same output using just one step.



Explain your answer.



6 R

Use An Algebraic Rule

7a. Jess is using the rule $(5a \div 2) - 3a$.

Toby is using the rule $(3a \div 2) - 5a$.

Toby says:



Both rules will always give a negative answer.

Do you agree? Explain your answer.



6 R

Use An Algebraic Rule

7b. Maia is using the rule $10(6a \div 2)$.

Isaac is using the rule $(10 \times 6a) \div 2$.

Maia says:



Both rules will always give the same answer.

Do you agree? Explain your answer.



6 R

8a. Use the cards below to create 4 different algebraic expressions for this function machine.



Work out the outputs for each expression.

What is the greatest output you can make?



6 PS

8b. Use the cards below to create 4 different algebraic expressions for this function machine.



Work out the outputs for each expression.

What is the greatest output you can make?



6 PS

9a. True or false?

$a^3 - (10a + a)$ is the same as $a^3 - 11a$.



Explain your answer.



6 R

9b. True or false?

$(\frac{1}{2}a \div 100) - 35$ will always result in a negative answer.



Explain your answer.



6 R