



1) a) Substitute the values given for each shape to work out the values of each expression.

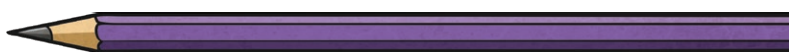
 = 3
  = 5
  = 8

i)  +  + 

ii)  - 

b) Draw the missing shape so that this expression has a value of 21.

 +  + _____



2) a) Use substitution to work out the values of these expressions.

$a = 6$ $b = 2.5$ $c = 12$

$b + 9$

$c - b$

ac

$a + c + b$

$b - 3$

b) Give the missing value so that the following expression has a value of 6. $c -$ _____

3) Use substitution to work out the values of these expressions.

$c = 0.5$ $f = 3$ $z = 1.25$

$3f + z$

$10c + f$

$4z - f$

$c + z + 0.25$

$cf + zf$

- 1) Do you agree or disagree with each of these statements about this formula?
Try substituting numbers into the formula to test your thinking.

$$c = 2b$$



- a) In this formula, the value of c is 4.

- b) In this formula, the value of b is half the value of c .

- 2) Are the following statements true or false? Explain your reasoning.

- a) When $f = 3$, $8f + 9$ has a value of 32.

- b) When $x = 10$ and $y = 1.5$, $xy + 20$ has a value of 35.

- c) When $x = 2.5$ and $f = 2.25$, $4x + 2f$ has a value of 13.5.



- 1) In both of these formulae, c stands for the same number and has a value between 20 and 100. Using substitution, give c a value and then find the possible values of a , b , x and z that will make all the formulae correct. Find two different solutions.

$$c = 4x - z$$

$$3a + 4b = c$$

- 2) By using substitution, give each of the shapes a different value so that the value of the expression will be a multiple of 6. Find at least four different possibilities.



= a square number



= a prime number



= a multiple of 4



+



+



- 1) a) Substitute the values given for each shape to work out the values of each expression.



$$\triangle = 3 \quad \square = 5 \quad \circ = 8$$

i) $\circ + \square + \triangle$

ii) $\triangle - \circ$

- b) Draw the missing shape so that this expression has a value of 21.



$$\circ + \square + \underline{\hspace{2cm}}$$

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$$\text{Orange circle} + \text{Pink heart} + \text{Green triangle}$$

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1) a) i) 16	ii) -5	3) $3f + z$	10.25
b) 		$10c + f$	8
2) a) $b + 9$	11.5	$4z - f$	2
$c - b$	9.5	$c + z + 0.25$	2
ac	72	$cf + zf$	5.25
$a + c + b$	20.5		
$b - 3$	-0.5		
b) a or 6			




1) a) *As we do not know the value of b in this formula, we have no way of knowing if the value of c is 4. For example, if $b = 2$, $c = 2 \times 2$. This means c now equals 4. However, if $b = 3$, $c = 2 \times 3$. This means c now equals 6, not 4.*

b) *This statement is correct. Although we do not know the exact values of b or c, we do know that 2 lots of b will give us c. If we apply the inverse operation, we can see that b must have a value that is half that of c.*

2) a) *This is false.* $(8 \times 3) + 9 = 33$

b) *This is true.* $(10 \times 1.5) + 20 = 35$

c) *This is false.* $4 \times 2.5 = 10$
 $2 \times 2.25 = 4.5$
 $10 + 4.5 = 14.5$



1) *A variety of answers are possible, for example:*

$a = 4, b = 3, x = 9, z = 12, c = 24$

$a = 8, b = 4, x = 16, z = 24, c = 40$

2) *A variety of answers are possible, for example:*

$9 + 5 + 4 = 18$

$9 + 13 + 8 = 30$

$25 + 3 + 8 = 36$

$25 + 5 + 36 = 66$

