Forming and Solving Equations (F)

Intervention Booklet

Name: _____

Class: _____

Useful websites:

www.mathswatchvle.com
(Video explanations and questions)
Username: STH…@twgash
Password: stmaths

www.methodmaths.com
(Past papers online that get instantly marked)
Centre ID: wga
Username: firstname
Password: lastname

www.hegartymaths.com
(Online tutorials and quizzes)
Login: first name and last name are case sensitive

www.bbc.co.uk/schools/gcsebitesize/maths

Solving Equations

Things to remember:

- "Solve" means to find the value of the variable (what number the letter represents).
- The inverse of + is – and the inverse of x is ÷
- Work one step at a time, keeping you = signs in line on each new row of working.

Questions:

1. (a) Solve $2y = 8$

y = ……

(1)

(b) Solve $t - 4 = 7$

t = ……

(1)

(c) Solve $\frac{x}{4} = 3$

x = ……

(1)

(3 marks)

2. (a) Solve $\frac{y}{3} = 6$

y = ……

(1)

(b) Solve $7y = 54$

y = ……

(1)

(c) Solve $2t - 5 = 9$

t = ……

(2)

(4 marks)

3. (a) Solve $4w = 20$

w = ……
(1)

(b) Solve $x - 6 = 3$

x = ……
(1)

(c) Solve $\frac{y}{3} = 7$

y = ……
(1)
(3 marks)

4. (a) Solve $b - 7 = 12$

b = ...
(1)

(b) Solve $5e = 40$

e = ...
(1)

(c) Solve $4m + 6 = 15$

m = ...
(2)

(d) Solve $5w - 6 = 10$

w = ...
(2)
(6 marks)

5. (a) Solve $4x + 1 = 9$

x = ...
(2)

(b) Solve $2x – 5 = 4$

x = ...
(2)

(c) Solve $2y – 1 = 12$

x = ...
(2)
(6 marks)

6. (a) Solve $4x + 1 = 19$

x = ...
(2)

(b) Solve $4x + 3 = 19$

x = ...
(2)

(c) Solve $2q + 7 = 1$

q = ...
(2)
(6 marks)

7. (a) Solve $x + x + x = 15$

x = ...
(2)

(b) Solve $6x – 7 = 38$

x = ...
(2)

(c) Solve $7x + 18 = 74$

x = ...
(2)
(6 marks)

8. (a) Solve $2y + 3 = g$

x = ...
(2)

(b) Solve $5(t – 3) = 25$

t = ...
(2)

(c) Solve $4(5y – 2) = 48$

y = ...
(2)
(6 marks)

9. Solve $13x + 1 = 11x + 9$

x = ...

(3 marks)

10. Solve $5y + 1 = 3y + 13$

y = ...

(3 marks)

11. Solve $3y + 10 = 5y + 3$

y = ...

(3 marks)

12. Solve $2y + 17 = 6g + 5$

y = ...

(3 marks)

Rearranging Formulae

Things to remember:

- Firstly decide what needs to be on its own.
- Secondly move all terms that contain that letter to one side. Remember to move all terms if it appears in more than one.
- Thirdly separate out the required letter on its own.

Questions:

1. Make u the subject of the formula
$D = ut + kt^2$

u = ...
(Total 2 marks)

2. (a) Solve $4(x + 3) = 6$

x = ...
(3)

(b) Make t the subject of the formula $v = u + 5t$

t = ...
(2)
(Total 5 marks)

3. (a) Expand and simplify
$(x – y)^2$

.....
(2)

(b) Rearrange $a(q – c) = d$ to make q the subject.

Q = ...
(3)
(Total 5 marks)

4. Make x the subject of
$5(x - 3) = y(4 - 3x)$

x = ...

(Total 4 marks)

5. $$P = \frac{n^2 + a}{n + a}$$

Rearrange the formula to make a the subject.

A =.....

(Total 4 marks)

6. $$\frac{x}{x + c} = \frac{p}{q}$$

Make x the subject of the formula.

X =.....

(Total 4 marks)

Linear Simultaneous Equations

Things to remember:

1. Scale up (if necessary)
2. Add or subtract (to eliminate)
3. Solve (to find x)
4. Substitute (to find y) (or the other way around)

Questions:

***1.** The Singh family and the Peterson family go to the cinema.
The Singh family buy 2 adult tickets and 3 child tickets.
They pay £28.20 for the tickets.
The Peterson family buy 3 adult tickets and 5 child tickets.
They pay £44.75 for the tickets.
Find the cost of each adult ticket and each child ticket.

(Total for question = 5 marks)

2. Solve

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

$$3x - 4y = 18$$

x = ...

y = ...

(Total for Question is 4 marks)

3. Solve the simultaneous equations

$4x + y = 25$

$x - 3y = 16$

x = ...

y = ...

(Total for Question is 3 marks)

4. Solve the simultaneous equations

$3x - 2y = 7$

$7x + 2y = 13$

x = ...

y = ...

(Total for Question is 3 marks)

5. A cinema sells adult tickets and child tickets.
The total cost of 3 adult tickets and 1 child ticket is £30
The total cost of 1 adult ticket and 3 child tickets is £22
Work out the cost of an adult ticket and the cost of a child ticket.

adult ticket £…..

child ticket £…..

(Total for question = 4 marks)

***6.** Paper clips are sold in small boxes and in large boxes.
There is a total of 1115 paper clips in 4 small boxes and 5 large boxes.
There is a total of 530 paper clips in 3 small boxes and 2 large boxes.
Work out the number of paper clips in each small box and in each large box.

(Total for Question is 5 marks)