

Name:.....

Total Marks:.....

# GCSE (9-1) Grade 7

## Re-arranging

# Harder Formulae



### Instructions

Use **black** ink or ball-point pen.

**Fill in the boxes** at the top of this page with your name.

Answer **all** questions.

Answer the questions in the spaces provided

– there may be more space than you need.

**Show all your working out**

### Information

The marks for **each** question are shown in brackets.

use this as a guide as to how much time to spend on each question.

Questions labelled with an **asterisk** (\*) are ones where the quality of your written communication will be assessed

### Advice

Read each question carefully before you start to answer it

Attempt every question

Check your answers if you have time at the end

1. Rearrange  $a(q - c) = d$  to make  $q$  the subject.

$$q = \dots\dots\dots$$

(3)

(Total 5 marks)

2. (a) Make  $n$  the subject of the formula  $m = 5n - 21$

$$n = \dots\dots\dots$$

(2)

(b) Make  $p$  the subject of the formula  $4(p - 2q) = 3p + 2$

$$p = \dots\dots\dots$$

(3)

(Total 5 marks)

3.

$$P = \pi r + 2r + 2a$$

Make  $r$  the subject of the formula

$$r = \dots\dots\dots$$

(Total 3 marks)

4. Make  $a$  the subject of the formula

$$2(3a - c) = 5c + 1$$

.....  
(Total 3 marks)

5. Make  $m$  the subject of the formula  $2(2p + m) = 3 - 5m$

$m =$  .....  
(Total 3 marks)

6. Make  $x$  the subject of

$$5(x - 3) = y(4 - 3x)$$

$$x = \dots\dots\dots$$

**(Total 4 marks)**

7. When you are  $h$  feet above sea level, you can see  $d$  miles to the horizon, where

$$d = \sqrt{\frac{3h}{2}}$$

Make  $h$  the subject of the formula

$$h = \dots\dots\dots$$

**(Total 4 marks)**

8.  $y = \frac{2pt}{p-t}$

Rearrange the formula to make  $t$  the subject.

$t = \dots\dots\dots$

**(Total 4 marks)**

9. Make  $b$  the subject of the formula  $a = \frac{2-7b}{b-5}$

$\dots\dots\dots$

**(Total 4 marks)**

10. 
$$P = \frac{n^2 + a}{n + a}$$

Rearrange the formula to make  $a$  the subject.

$a = \dots\dots\dots$

**(Total 4 marks)**

11. 
$$\frac{x}{x + c} = \frac{p}{q}$$

Make  $x$  the subject of the formula.

$x = \dots\dots\dots$

**(Total 4 marks)**

12. Rearrange  $\frac{1}{u} + \frac{1}{v} = \frac{1}{f}$

to make  $u$  the subject of the formula.

Give your answer in its simplest form.

.....  
**(Total 5 marks)**



13. Make  $c$  the subject of  $a = \sqrt{b + \frac{c}{2}}$

.....  
(Total 3 marks)

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14. Make  $c$  the subject of  $a = \sqrt{b + \frac{c^2}{2}}$

.....  
(Total 3 marks)

15. Make  $p$  the subject of  $t = \sqrt{\frac{p^2 + 1}{4}}$

.....  
(Total 3 marks)

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16. Make  $p$  the subject of  $t = \sqrt{\frac{p^3 - 3}{4}}$

.....  
(Total 3 marks)