

GCSE Maths: Changing the subject: one step and two steps (Higher): worksheet

GCSE Maths - Substitution and Formulae - Higher - Lesson 8.6

Name: _____

Date: _____

Score: _____

15 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch08-substitution-formulae/higher/changing-the-subject-one-step-and-two-steps/

Exercise 8G Changing the subject: one and two steps Non-calculator

1 Make x the subject of each formula.

(a) Make x the subject of $y = x + 5$

Answer: _____

(b) Make x the subject of $y = x - 3$

Answer: _____

(c) Make x the subject of $y = 4x$

Answer: _____

(d) Make x the subject of $y = \frac{x}{3}$

Answer: _____

(e) Make x the subject of $y = x + a$

Answer: _____

(f) Make x the subject of $y = kx$

Answer: _____

2 Make x the subject of each formula.

(a) Make x the subject of $y = 2x + 3$

Answer: _____

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

Answer: _____

(c) Make x the subject of $y = \frac{x}{2} + 1$

Answer: _____

(d) Make x the subject of $y = \frac{x}{4} - 2$

Answer: _____

(e) Make x the subject of $y = 7 + 3x$

Answer: _____

(f) Make x the subject of $y = 2x - 9$

Answer: _____

3 Rearrange each formula to make the letter in brackets the subject.

(a) Make a the subject of $F = ma$

Answer:

(b) Make m the subject of $F = ma$

Answer:

(c) Make I the subject of $V = IR$

Answer:

(d) Make R the subject of $V = IR$

Answer:

(e) Make d the subject of $s = \frac{d}{t}$

Answer:

(f) Make t the subject of $s = \frac{d}{t}$

Answer:

4 Make the letter shown the subject.

(a) Make u the subject of $v = u + at$

Answer:

(b) Make a the subject of $v = u + at$

Answer:

(c) Make d the subject of $C = \pi d$

Answer:

(d) Make h the subject of $A = \frac{1}{2}bh$

Answer:

(e) Make w the subject of $P = 2l + 2w$

Answer:

(f) Make s the subject of $P = 4s$

Answer:

5 Make x the subject of each formula.

(a) Make x the subject of $y = mx + c$

Answer:

(b) Make m the subject of $y = mx + c$

Answer:

(c) Make c the subject of $y = mx + c$

Answer:

6 Callum is asked to make x the subject of $y = 3x + 2$. He writes $x = y - \frac{2}{3}$. Use $x = 5$ to show that he is wrong, and give the correct answer.

Answer:

7 The cost, £ C , of hiring a van for d days is $C = 35d + 20$.

(a) Make d the subject of the formula.

Answer:

(b) Use your formula to find how many days the van was hired for when the cost was £195.

Answer:

8 The area of a triangle is $A = \frac{1}{2}bh$.

(a) Make h the subject of the formula.

Answer:

(b) A triangle has area 30 cm^2 and base 12 cm . Work out its height.

Answer:

9 A car has mass $m \text{ kg}$ and a force of F newtons acts on it. The acceleration $a \text{ m/s}^2$ is given by $F = ma$.

(a) Make a the subject of the formula.

Answer:

(b) Work out a when $F = 3000$ and $m = 1200$.

Answer:

10 A train travels a distance $d \text{ km}$ at an average speed $s \text{ km/h}$. It takes t hours, where $s = d/t$.

(a) Make t the subject.

Answer:

(b) How long does a journey of 360 km take at an average speed of 90 km/h ?

Answer:

11 The simple interest, I , earned on a sum of money P at $R\%$ a year for T years is $I = \frac{PRT}{100}$. Make P the subject.

Answer:

12 Make y the subject of each formula.

(a) Make y the subject of $x = 2y + 1$

Answer:

(b) Make y the subject of $x = \frac{y}{5} - 3$

Answer:

(c) Make y the subject of $a = 3y - b$

Answer:

(d) Make y the subject of $p = q + 4y$

Answer:

13 The cooking time T minutes for a turkey of mass $m \text{ kg}$ is $T = 40m + 20$. Jess cooks a turkey for 180 minutes. Make m the subject and work out the mass of her turkey.

(a) Make m the subject.

Answer:

(b) Work out m when $T = 180$.

Answer:

- 14** (a) Rearrange $y = 12 - 2x$ to make x the subject. (b) Show that when $x = 4$ your formula gives back the right value.

(a) Make x the subject of $y = 12 - 2x$

Answer:

(b) Check with $x = 4$

Answer:

- 15** Starting from $s = d/t$, show that $d = st$.

Answer: