

Name:

Exam Style Questions

Changing the Subject



Equipment needed: Pen

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Video Tutorial

www.corbettmaths.com/contents

Video 7



Answers and Video Solutions



1. Make d the subject of



$$e = d + 5$$

$$\begin{array}{r} -5 \quad -5 \\ e - 5 = d \end{array}$$

$$e - 5 = d$$

$$d = e - 5$$

$$d = \frac{e - 5}{\dots\dots\dots} \quad (1)$$

2. Rearrange $t = \frac{w}{2}$ to make w the subject.



$$\begin{array}{r} \times 2 \quad \times 2 \\ 2t = w \end{array}$$

$$2t = w$$

$$w = 2t$$

$$w = \frac{2t}{\dots\dots\dots} \quad (1)$$

3. Rearrange this formula to make c the subject



$$a = c - w$$

Circle your answer.

$$c = a - w$$

$$c = w - a$$

$$c = aw$$

$$\textcircled{c = a + w}$$

$$\begin{array}{r} a = c - w \\ +w \quad +w \\ a + w = c \end{array}$$

(1)

4. Make x the subject of



$$y = 3x$$

Circle your answer.

$$x = y + 3$$

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

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

$$x = y - 3$$

$$y = 3x$$
$$\div 3 \quad \div 3$$

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

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

(1)

5. Make w the subject of the formula



$$y = 3w - a$$

$$+ a \quad + a$$

$$y + a = 3w$$

$$\div 3 \quad \div 3$$

$$\frac{y+a}{3} = w$$

$$\text{or } \frac{a+y}{3}$$

$$w = \frac{y+a}{3}$$

(2)

6. Make w the subject of the formula



$$s = \frac{w}{a}$$

$$\times a \quad \times a$$

$$as = w$$

$$w = as$$

$$w = as$$

(1)

7. $v = u + 10t$



(a) Work out the value of v when $u = 4$ and $t = 3$

$$v = 4 + 10 \times 3$$

$$v = 4 + 30$$

$$v = 34$$

$$v = \frac{34}{(2)}$$

(b) Make u the subject of the formula

$$v = u + 10t$$

$$-10t \quad -10t$$

$$v - 10t = u$$

$$u = \frac{v - 10t}{(2)}$$

(c) Make t the subject of the formula

$$v = u + 10t$$

$$-u \quad -u$$

$$v - u = 10t$$

$$\div 10 \quad \div 10$$

$$\frac{v - u}{10} = t$$

$$t = \frac{v - u}{10} (2)$$

8. Given that $x + y = 1$



What does y equal?

$$\begin{array}{r} x + y = 1 \\ -x \quad -x \\ \hline y = 1 - x \end{array}$$

$$y = \dots 1 - x \dots \quad (1)$$

9. Rearrange $y = \frac{k}{x}$ to make x the subject



$$\begin{array}{r} x \times \quad x \times \\ xy = k \\ \div y \quad \div y \\ x = \frac{k}{y} \end{array}$$

$$x = \dots \frac{k}{y} \dots \quad (2)$$

10. Isaac is rearranging $m = 3t - 8$ to make t the subject.



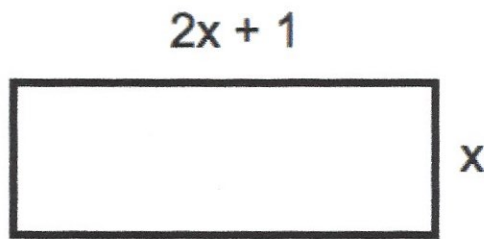
$$\begin{array}{r} m = 3t - 8 \\ \text{(} -8 \text{)} \quad \text{(} -8 \text{)} \\ m - 8 = 3t \\ \div 3 \quad \div 3 \\ \frac{m - 8}{3} = t \end{array}$$

Explain what mistake Isaac has made.

..... Isaac should have added 8

.....
(1)

11. Here is a rectangle.



P is the perimeter of the rectangle.

(a) Show that $P = 6x + 2$

$$P = x + (2x + 1) + x + (2x + 1)$$
$$P = 6x + 2$$

(2)

(b) Express x in terms of P

$$P = 6x + 2$$
$$\begin{array}{r} -2 \\ \hline P - 2 = 6x \end{array}$$
$$\begin{array}{r} \div 6 \\ \hline \frac{P - 2}{6} = x \end{array}$$

$$x = \frac{P - 2}{6}$$

(2)

12. Make m the subject of the formula



$$s = \frac{hm}{4}$$

$$\times 4 \quad \times 4$$

$$4s = hm$$

$$\div h \quad \div h$$

$$\frac{4s}{h} = m$$

$$m = \frac{4s}{h}$$

$$m = \frac{4s}{h} \dots \dots \dots (2)$$

13. Express v in terms of t



$$t = \frac{v}{4} + 1$$

$$-1 \quad -1$$

$$t - 1 = \frac{v}{4}$$

$$\times 4 \quad \times 4$$

$$4t - 4 = v$$

$$v = \frac{4t - 4}{1} \dots \dots \dots (2)$$

or

$$v = 4(t - 1)$$

14. Make d the subject of the formula $c = 4d + 5$



$$-5 \quad -5$$

$$c - 5 = 4d$$

$$\div 4 \quad \div 4$$

$$\frac{c-5}{4} = d$$

$$d = \frac{c-5}{4} \dots\dots\dots (2)$$

15. Make g the subject of the formula:



$$a = \sqrt{g}$$

$$a^2 = g$$

$$g = a^2 \dots\dots\dots (2)$$

16. Make y the subject of the formula:



$$k = y^3 + a$$

$$-a \quad -a$$

$$k - a = y^3$$

$$\sqrt[3]{k - a} = y$$

$$y = \sqrt[3]{k - a} \dots\dots\dots (2)$$

17. $C = 4x + 5y$



(a) Find the value of C when $x = 9$ and $y = -2$

$$C = 4 \times 9 + 5(-2)$$

$$C = 36 + (-10)$$

$$C = 26 \dots\dots\dots (2)$$

(b) Make x the subject of the formula

$$C = 4x + 5y$$

$$-5y \quad -5y$$

$$C - 5y = 4x$$

$$\div 4 \quad \div 4$$

$$\frac{C - 5y}{4} = x$$

$$x = \frac{C - 5y}{4} \dots\dots\dots (2)$$

(c) Find the value of x when $C = 51$ and $y = 3$

$$51 = 4x + 15$$

$$-15 \quad -15$$

$$36 = 4x$$

$$x = 9$$

$$x = 9 \dots\dots\dots (2)$$

18. Given that $3y = 2x$



(a) Write y in terms of x

$$3y = 2x$$

$$\div 3 \quad \div 3$$

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

$$\text{or } y = \frac{2}{3}x$$

$$y = \frac{2}{3}x \dots\dots\dots (2)$$

(b) Write x in terms of y

$$3y = 2x$$

$$\div 2 \quad \div 2$$

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

$$\text{or } \frac{3}{2}y = x$$

$$x = \frac{3}{2}y \dots\dots\dots (2)$$

19. Rearrange $2x - y + 1 = 0$ to make x the subject



$$+y \quad +y$$

$$2x + 1 = y$$

$$-1 \quad -1$$

$$2x = y - 1$$

$$\div 2 \quad \div 2$$

$$x = \frac{y-1}{2}$$

$$x = \frac{y-1}{2} \dots\dots\dots (2)$$

20. Rearrange $8 + c = 3 - a$ to make a the subject.



$$+ a \quad + a$$

$$8 + c + a = 3$$

$$- 8 \quad - 8$$

$$c + a = -5$$

$$- c \quad - c$$

$$a = -5 - c$$

or

$$a = -(5 + c)$$

$$a = \frac{-5 - c}{\dots\dots\dots} \quad (2)$$

21. Make w the subject of $a = \frac{w - 2}{6}$



$$\times 6 \quad \times 6$$

$$6a = w - 2$$

$$+ 2 \quad + 2$$

$$6a + 2 = w$$

$$w = \frac{6a + 2}{\dots\dots\dots} \quad (2)$$

22. Rearrange the formula $r = \sqrt{3w + t}$ to make t the subject



$$\begin{aligned} r^2 &= 3w + t \\ -3w &\quad -3w \\ r^2 - 3w &= t \end{aligned}$$

$$t = \frac{r^2 - 3w}{\dots} \quad (2)$$

23. Rosie writes down Pythagoras' Theorem, $a^2 + b^2 = c^2$



Make a the subject

$$\begin{aligned} &\quad -b^2 \quad -b^2 \\ a^2 &= c^2 - b^2 \end{aligned}$$

$$a = \sqrt{c^2 - b^2}$$

(only positive due to context)

$$a = \frac{\sqrt{c^2 - b^2}}{\dots} \quad (2)$$

24. Make p the subject of $ac = \frac{\pi}{p}$



$$\times p \quad \times p$$

$$\begin{aligned} acp &= \pi \\ \div ac &\quad \div ac \\ p &= \frac{\pi}{ac} \end{aligned}$$

$$p = \frac{\pi}{ac} \quad (2)$$

25. Rearrange $v^2 = u^2 + 2as$ to make s the subject.



$$-u^2 \quad -u^2$$

$$v^2 - u^2 = 2as$$

$$\div 2a \quad \div 2a$$

$$\frac{v^2 - u^2}{2a} = s$$

$$s = \frac{v^2 - u^2}{2a} \dots \dots \dots (2)$$

26. Rearrange $w = \sqrt[3]{5y - 8}$ to make y the subject.



$$w^3 = 5y - 8$$

$$+ 8 \quad + 8$$

$$w^3 + 8 = 5y$$

$$\div 5 \quad \div 5$$

$$\frac{w^3 + 8}{5} = y$$

$$y = \frac{w^3 + 8}{5} \dots \dots \dots (3)$$