"Full Coverage": Changing the Subject

This worksheet is designed to cover one question of each type seen in past papers, for each GCSE Higher Tier topic. This worksheet was automatically generated by the DrFrostMaths Homework Platform: students can practice this set of questions interactively by going to www.drfrostmaths.com/homework, logging on, *Practise → Past Papers/Worksheets* (or *Library → Past/Past Papers* for teachers), and using the 'Revision' tab.

Question 1

Categorisation: Change the subject where the subject appears once and simple addition/subtraction/multiplication/division is required.

[Edexcel GCSE June2007-5H Q11a]
Make n the subject of the formula $m = 5n - 21$

$n = $ ....

Question 2

Categorisation: Change the subject where either expansion of a bracket or division by a terms is required first.

[Edexcel IGCSE Jan2013-3H Q12]
Make h the subject of the formula $A = 2\pi r(r + h)$

$h = $ ....

Question 3

Categorisation: Change the subject where the subject is being subtracted.

[Edexcel GCSE Nov2011-3H Q17b]
Rearrange $y = p - 2qx^2$

to make x the subject of the formula.

$x = $ ....

Question 4

Categorisation: Change the subject involving a fractional amount.

[Edexcel IGCSE Jan2015-4H Q12d]

Make b the subject of $P = \frac{1}{2}ab^2$

$b = $ ....

Question 5

Categorisation: Change the subject involving a square root.

[Edexcel GCSE June2016-2H Q18b]

Make y the subject of the formula $p = \sqrt{\frac{x+y}{5}}$

$y = $ ....

Question 6

Categorisation: Change the subject involving a more general power.

[Edexcel IGCSE Jan2015(R)-4H Q12b]

Rearrange the formula $I = kT^4$ to make T the subject.

$T = $ ....

Question 7

Categorisation: Change the subject involving algebraic fractions.

[Edexcel GCSE June2009-3H Q25b]

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.

$u = $ ....

Question 8

Categorisation: Change the subject where the subject appears multiple times, but only simple collecting of like terms is required.

[Edexcel IGCSE Jan2016-3H Q12]
Make t the subject of $5(t - g) = 2t + 7$

$$t = \text{.........................}$$

Question 9

Categorisation: Change the subject where the subject appears multiple times, but the subject is already exclusively on one side of the equation.

[Edexcel IGCSE Jan2014(R)-3H Q16]

Make r the subject of the formula $A = 4r^2 - \pi r^2$ where r is positive.

$$r = \pm \text{.........................}$$

Question 10

Categorisation: Change the subject where the subject appears multiple times, and the subject appears on both sides of the equation.

[Edexcel GCSE Nov2013-2H Q21b]
Make m the subject of $g - 3m = am + 5$

$$m = \text{.........................}$$

Question 11

Categorisation: Change the subject where the subject appears multiple times, involving a fraction.

[Edexcel IGCSE May2016-3H Q18]
Make t the subject of the formula

$$m = \frac{t + 1}{t - 3}$$

$$t = \text{.........................}$$

Question 12
Categorisation: Change the subject where the subject appears multiple times, and where other terms have powers.

[Edexcel GCSE June2006-5H Q22]

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

Rearrange the formula to make a the subject.

$a = $ ....

Question 13
Categorisation: Change the subject where the subject appears multiple times, being careful with signs.

[Edexcel GCSE Nov2015-1H Q21b]

Make y the subject of the formula

$$t = \frac{2 - 3y}{y + 2}$$

$y = $ ....

Question 14
Categorisation: Change the subject where the subject appears multiple times, using cross-multiplication.

[Edexcel GCSE Nov2006-6H Q19]

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

Make x the subject of the formula.

$x = $ ....

Question 15

Categorisation: Change the subject where the subject appears multiple times, involving a square root.

[Edexcel IGCSE May2013(R)-3H Q17]

Make n the subject of the formula

$$t = \sqrt{\frac{n+3}{n}}$$

$n = $ ....

Question 16

Categorisation: Change the subject where the subject appears multiple times, involving algebraic fractions.

[Edexcel IGCSE May2013-3H Q22 Edited]

Make y the subject of

$$\frac{y}{x} + \frac{2y}{x+4} = 3$$

Give your answer as simply as possible.

$y = $ ....

Question 17

Categorisation: As above.

[Edexcel GCSE Nov2014-2H Q22b]

Make m the subject of

$$\frac{m}{v} - \frac{t}{b} = \frac{m-t}{R}$$

$m = $ ....

Answers

Question 1

$n = \frac{m+21}{5}$

Question 2

$h = \frac{A-2\pi r^2}{2\pi r}$

Question 3

$x = \pm\sqrt{\frac{p-y}{2q}}$

Question 4

$b = \pm\sqrt{\frac{2P}{a}}$

Question 5

$y = 5p^2 - x$

Question 6

$T = \sqrt[4]{\frac{I}{k}}$

Question 7

$u = \frac{fv}{v-f}$

Question 8

$t = \frac{5g+7}{3}$

Question 9

$r = \pm\sqrt{\frac{A}{4-\pi}}$

Question 10

$m = \frac{g-5}{a+3}$

Question 11

$t = \frac{3m+1}{m-1}$

Question 12

$a = \frac{n^2-nP}{P-1}$

Question 13

$y = \frac{2-2t}{t+3}$

Question 14

$x = \frac{pc}{q-p}$

Question 15

$n = \frac{3}{t^2-1}$

Question 16

$y = \frac{3x(x+4)}{3x+4}$

Question 17

$m = \frac{tv(R-b)}{b(R-v)}$