REARRANGING HARDER FORMULAE

GRADE 7

AtoZrevision

Examination Practice Questions

You should have:

A ruler, protractor, compasses, a pen, pencil, eraser, calculator.
For some questions, you may need tracing paper.

Instructions

- Use **black** ink or ball-point pen.
- Answer the questions in the spaces provided – *there may be more space than you need.*
- **Calculators may be used.**

Information

- The marks for each question are shown in brackets.
- Use the number of marks for each question as a guide as to how much time to spend on each question. As a rough guide, you can multiply the number of marks by 1.2 to see how many minutes you should spend on a question.
- Questions been carefully compiled from or modelled on a variety of past papers and will generally get more challenging as the document progresses. Some of the later questions will go beyond the core grade level for this topic.

Advice

- Read each question carefully before you start to answer it.
- Don’t forget to have fun.
- Check your answers at the end.

Q1. AtoZrevision.com

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

.....

(3 marks)

Q2. AtoZrevision.com

Here is a shape made from a rectangle and a semicircle.

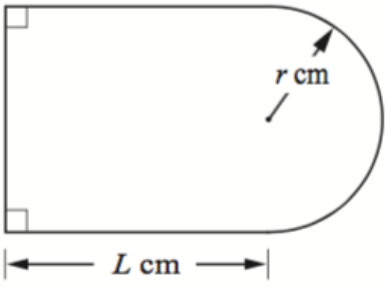

Diagram **NOT** accurately drawn

The length of the rectangle is L cm.
The radius of the semicircle is r cm.

The perimeter, P cm, of the shape is given by the formula

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

Make r the subject of the formula $P = \pi r + 2L + 2r$

.....

(3 marks)

Q3. AtoZrevision.com

Here is a shape *ABCDE*.

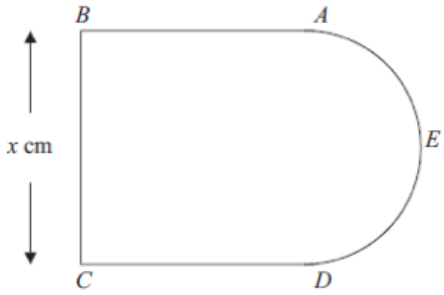

Diagram **NOT** accurately drawn

AB, *BC* and *CD* are three sides of a square.
BC = x cm.
AED is a semicircle with diameter *AD*.

The perimeter, *P* cm, of the shape *ABCDE* is given by the formula

$P = 3x + \frac{\pi x}{2}$

Rearrange this formula to make x the subject.

.....

(2 marks)

Q4. AtoZrevision.com

Make g the subject of $3e + 4g = 7 + 9eg$

.....

(3 marks)

Q5. AtoZrevision.com

Rearrange the following formula to make x the subject $cx - 3 = 4x + d$

.....

(3 marks)

Q6. AtoZrevision.com

Here is a formula $5t + 3 = 4w(t + 2)$

Rearrange the formula to make t the subject.

.....

(3 marks)

Q7. AtoZrevision.com

Make m the subject of $g - 3m = am + 5$

.....

(3 marks)

Q8. AtoZrevision.com

Make y the subject of $3(y + 2x - 1) = x + 5y$

.....

(3 marks)

Q9. AtoZrevision.com

Make f the subject of $w = \frac{2f+3}{8-f}$

.....

(3 marks)

Q10. AtoZrevision.com

Given that y is positive, make y the subject of $y = \sqrt{ay^2 + n}$.

.....

(5 marks)

Q11. AtoZrevision.com

Make x the subject of the formula $\frac{a+2x}{a-x} = n$

.....

(4 marks)

Q12. AtoZrevision.com

Rearrange $x = \frac{2w+1}{5-3w}$ to make w the subject.

.....

(4 marks)

Q13. AtoZrevision.com

Make t the subject of the formula

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

.....

(4 marks)

Q14. AtoZrevision.com

Make m the subject of $p^2 = \frac{x+m}{2m-y}$

.....

(3 marks)

Q15. AtoZrevision.com

Given that $n > 0$

make n the subject of the formula $y = \frac{n^2+d}{n^2}$

.....

(4 marks)

Q16. AtoZrevision.com

Make e the subject of the formula

$$T = \frac{n(1+e)}{(1-e)}$$

……

(5 marks)

Q17. AtoZrevision.com

Make n the subject of the formula

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

……

(4 marks)

Q18. AtoZrevision.com

Make y the subject of the formula

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

……

(5 marks)

Q19. AtoZrevision.com

Make x the subject of

$$y = \sqrt{\frac{x+1}{x-4}}$$

……

(4 marks)

Q20. AtoZrevision.com

Make c the subject of the formula

$$p = \sqrt{\frac{ac + 8}{3 + c}}$$

.....

(4 marks)

Q21. AtoZrevision.com

Make x the subject of

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

.....

(4 marks)

Make x the subject of the formula.

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

……

(4 marks)

Make y the subject of

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

Give your answer as simply as possible.

.....

(5 marks)

Make m the subject of

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

.....

(4 marks)

Q25. AtoZrevision.com

The ratio $(y + x)$: $(y - x)$ is equivalent to k: 1

Find a formula for y in terms of x and k.

.....

(3 marks)

Q26. AtoZrevision.com

Given that y: $2x$ is equivalent to $3y$: $3x - 2$

Find a formula for y in terms of x

.....

(4 marks)

QUESTIONS FROM MATHEMATICAL COMPETITIONS

Q1. AtoZrevision.com

Two numbers x and y have a product which is equal to their sum.
Which of these expressions gives x in terms of y?

Tick the correct answer.

$\frac{y}{y-1}$

$\frac{y}{y+1}$

$\frac{y+1}{y}$

$\frac{y-1}{y}$

$\frac{y^2}{y+1}$