

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

b is directly proportional to a
 b is 10 when a is 8

Work out b when a is 9

.....

(2 marks)

Q2.

AtoZrevision.com

q is directly proportional to r .
 q is 68 when r is 20.
Work out q when r is 25.

.....

(2 marks)

Q3.

AtoZrevision.com

y is directly proportional to x .

When $x = 500$, $y = 10$

Find a formula for y in terms of x .

.....

(2 marks)

Q4.

AtoZrevision.com

The time, T seconds, it takes a water heater to boil some water is directly proportional to the mass of water, m kg, in the water heater.

When $m = 250$, $T = 600$

Find T when $m = 400$

.....
(3 marks)

Q5.

AtoZrevision.com

A ball falls vertically after being dropped.
The ball falls a distance d metres in a time of t seconds.

d is directly proportional to the square of t .

The ball falls 20 metres in a time of 2 seconds. Calculate the time the ball takes to fall 605 m.

.....
(4 marks)

Q6.

AtoZrevision.com

The distance, D , travelled by a particle is directly proportional to the square of the time, t , taken.

When $t = 40$, $D = 30$

Find D when $t = 2$

.....
(3 marks)

Q7.

AtoZrevision.com

The height of a balloon, h , varies directly as the square root of its surface area, A .

When the balloon's surface area is 81 its height is 12

What is the height when its surface area is 144?

.....
(3 marks)

Q8.

AtoZrevision.com

The time period, T , of a simple pendulum is directly proportional to the square root of the length, d , of the pendulum.

When $d = 6$, $T = 5$

Find the value of T when $d = 3$

.....
(4 marks)

Q9.

AtoZrevision.com

P is directly proportional to the cube of Q .

When $Q = 15$, $P = 1350$

Find a formula for P in terms of Q .

.....
(3 marks)

The mass, in milligrams, of a steel ball bearing is directly proportional to the cube of its diameter, in millimetres.

A 3.5 mm diameter ball bearing has a mass of 170 mg.

Calculate the mass of a ball bearing with a diameter of 5.5 mm.

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(3 marks)