

IGCSE Mathematics Revision

Session 1

1.4 Powers and Roots	calculate squares, square roots, cubes and cube roots use index notation and index laws for multiplication and division of positive integer powers express integers as the product of powers of prime factors	$720 = 2^4 \times 3^2 \times 5$
1.6 Percentages	use reverse percentages	In a sale, prices were reduced by 30%. The sale price of an item was £17.50. Calculate the original price of the item
1.8 Degree of Accuracy	solve simple percentage problems, including percentage increase and percentage decrease solve problems using upper and lower bounds where values are given to a degree of accuracy	Find the interest earned after one year on \$3,000 invested at 5% per annum The dimensions of a rectangle are 12 cm and 8 cm to the nearest cm. Calculate, to 3 significant figures, the smallest possible area as a percentage of the largest possible area.

(a) Simplify, leaving your answer in index form

(i) $2^4 \times 2^3$

.....

(ii) $3^8 \div 3^2$

.....

(2)

(b) $5^x = 1$

Find the value of x .

$x =$

(1)

(Total 3 marks)

(b) Simplify $(2p^4)^3$

.....

(2)

(c) Simplify $(64y^6)^{\frac{2}{3}}$

.....

(2)

Evaluate the following.
Give your answers as fractions.

(a) 2^{-3}

.....
(1)

(b) $\left(\frac{27}{343}\right)^{\frac{1}{3}}$

.....
(1)

(c) $\left(\sqrt{\frac{3}{8}}\right)^4$

.....
(1)

In a sale, normal prices are reduced by 12%.
The sale price of a computer is £726

Work out the normal price of the computer.

£

(Total 3 marks)

Toni buys a car for £2500 and sells it for £2775.
Calculate her percentage profit.

..... %

(Total 3 marks)

Pat drops a ball onto a wooden floor.

The ball bounces to a height which is 26% less than the height from which it is dropped.

- (a) Pat drops the ball from a height of 85 cm.
Calculate the height to which it first bounces.

..... cm

(3)

- (b) Pat drops the ball from a different height.
It first bounces to a height of 48.1 cm.
Calculate the height from which he dropped it.

..... cm

(3)

(Total 6 marks)

- (b) Kareena invested an amount of money at an interest rate of 4.5% per year.
After one year, she received 117 dollars interest.
Work out the amount of money Kareena invested.

..... dollars
(2)

- (c) Ravi invested an amount of money at an interest rate of 4% per year.
At the end of one year, interest was added to his account and the total amount in his
account was then 3328 dollars.
Work out the amount of money Ravi invested.

..... dollars
(3)

The length of a side of a square is 6.81 cm, correct to 3 significant figures.

- (a) Work out the lower bound for the perimeter of the square.

..... cm
(2)

- (b) Give the perimeter of the square to an appropriate degree of accuracy.
You must show working to explain how you obtained your answer.

..... cm
(2)

(Total 4 marks)

The length, 7.6 cm, of PQ is correct to 2 significant figures.

- (b) (i) Write down the upper bound of the length of PQ .

..... cm

- (ii) Write down the lower bound of the length of PQ .

..... cm
(2)

Correct to 1 significant figure, $x = 7$ and $y = 9$

(a) Calculate the lower bound for the value of xy

.....
(2)

(b) Calculate the upper bound for the value of $\frac{x}{y}$

.....
(3)

(Total 5 marks)

- The volume of oil in a tank is 1000 litres, correct to the nearest 10 litres.
The oil is poured into tins of volume 2.5 litres, correct to one decimal place.

Calculate the upper bound of the number of tins which will be required.

.....
(Total 3 marks)

Answers

$2^7, 3^6, 0, 2^4 p^{12}, 16y^4$

$\frac{1}{8}, \frac{3}{7}, \frac{9}{64}$

825 11 62.9 65

2600 3200

27.22 27 7.65 7.55

55.25, 0.8823529412, 411