

**MathsMind 2012**  
**Year 9**

**Question 1**

$$\sqrt{4} + \sqrt{9} + \sqrt{169} + 25 - \sqrt{144}$$

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 2**

Write as a fraction in its simplest form:

$$\frac{12 \times 9 \times 20}{8 \times 25 \times 24}$$

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 3**

Calculate

$$\frac{100}{0.05 \times 0.004}$$

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**MathsMind 2012**  
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**Question 4**

A donkey eats grass at the rate of  $0.5 \text{ m}^2$  per minute.  
If it is tethered by a 4 metre rope to a peg in the ground, how soon will it want to be moved? Let  $\pi = 3.1$  for this question.

***You must round your answer, in minutes, to the nearest whole number.***

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 5**

A rectangular wall is painted in different colours. The first half of the wall is painted blue, a third of the whole wall is yellow, and the remaining 2 metres of the wall is green. How long is the wall?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 6**

A group of students sit evenly spaces in a circle. The third student sits exactly opposite the twentieth student. How many students are there?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 7**

Seven years ago, Hugo was three quarters of his present age. How old is Hugo now?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 8**

Write your answer as a fraction

$$1 + \frac{\frac{1}{1 - \frac{1}{1 + \frac{1}{2}}}}{1}$$

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 9**

In the Alphaville to Betaville walking-race, Lewis starts at 09:05, and finishes the 80 km distance at 17:05, and, in the Gammatown to Deltatown walking-race, Andrew began the 16 km distance at 09:15, finishing at 11:15. If both men walked from Sigma City to Omegaville, a distance of 30 km, by what distance would one beat the other? Assume each man walks at his own competitive speed.

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 10**

I am thinking of a number. If I add thirteen halves of the number to half of the number, I obtain twenty more than twice the number. What is the number I am thinking about?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 11**

A whole number is composed of three digits. The digits are prime numbers. The last digit is four more than the first digit. The product of all three digits is 105. What is the number?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 12**

Sarah bounces a spongy ball which bounces back up to half the distance it had fallen. She lets it fall from a height of 160 metres and it begins bouncing. How many bounces (hits on the floor) will the ball make before it rises to less than 1 metre?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 13**

Twelve people at a school reunion all shake hands with each other. How many handshakes will occur for everybody to meet each other?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 14**

The product of two consecutive prime numbers is 221. What are the two prime numbers?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 15**

Find the sum of all the whole numbers between 1 and 100, inclusive, which contain at least one '1'

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 16**

Freda has a bag of lollies. She gives one third of them to Steve. Steve gives a quarter of his lollies to Hoana, and Hoana gives one third of her lollies to Jake. Jake received one lolly from Hoana. Poor Jake.  
How many lollies did Freda originally have?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 17**

In the old days, people paid for goods using pounds (symbol = £), shillings (s) and pennies (d). e.g., £3 5s 7d was three pounds, five shillings, and seven pennies (or 'pence').

£1 = 20 s, and 1 s = 12d. This meant there were  $20 \times 12 = 240$  pennies in £1. Thus, if Bob handed over a 'fiver' (£5 note) to buy a wireless radio valve costing £1 17s 4d, he would receive change of £3 2s 8d from the old cash register which sounded like a pane of glass breaking.

**Your question:** Molly handed over a 'tenner' (£10 note) to pay her rent. The landlord handed Molly back her change, £6 5s 1d. How much rent did she pay?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 18**

Also, in the old days, units for distances went like this:

1 mile = 8 furlongs

22 yards = 1 chain

10 leagues = 30 miles

2 furlongs = 20 chains.

**Question:** How many yards in 1 league?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 19**

(This question will test your knowledge of Roman numerals)

In the ancient village of Mathsville the Cathedral was built in CMI, and the hotel in the year MCXCVIII.

How many years was the Cathedral built before the hotel was built?

Your final answer must be written in Roman Numerals

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

**Question 20**

In the old days people travelled between Mt Maunganui and Tauranga by ferry. A ferry leaves the Tauranga wharf, bound for Mount Maunganui, travelling at 20 km/hr in still water.

Another ferry departs Mt Maunganui at the same time, bound for Tauranga, and travelling at 25 km/hr.

Assuming both vessels follow the same direct route (and avoid each other), how far apart are they 6 minutes before they pass each other?

The total distance for the trip is 12 km.

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5