

MATHS CHALLENGE 5



RALPH: Hello, good to have you back for another **Maths Challenge**, the quiz that unlocks the mysteries of mental maths and turns you all into mental maths masterminds. So let's get started.

MATRIX: We can't start Round 1 yet, because I haven't given them today's maths meaning.

RALPH: Sorry, Matrix, I forgot! What mathematical expression have you got for us today?

MATRIX: **Area.** The 'area' of a shape is the measurement of the space inside it. To find the area of a rectangle you multiply the length of the longer side by the length of the shorter side. So the area of a rectangle 3cm wide by 4cm long is 3 multiplied by 4. 12cm².

RALPH: Got it, so now we can start the quiz!

Round 1 – Beat the clock!

Listen hard because the first question contains the word area. Here we go...

Question 1. If the area of a square is 16cm², how long is each side? The area is 16cm². What length are the sides?

Second question. How many millimetres in one-and-a-half centimetres? One-and-a-half centimetres: how many millimetres?

Question 3. What is 10% of 50p? 10% of 50p?

Question 4. How many days are there in a leap year? There are 365 days in a year, but how many days in a *leap* year?

Question 5. What is 10% of a £1? 10% of £1?

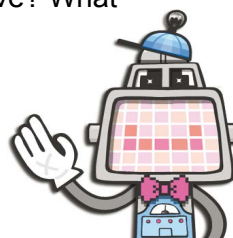
Question 6. How many sides has a decagon? A decagon has how many sides?

Seventh question. If $3Y = 21$, what is Y? Listen again. $3 \times Y = 21$, so what is Y?

Question 8. What is half of 1.6? Half of 1.6 - what is it?

Question 9. How many degrees in half a right angle? How many degrees in half a right angle?

And last question - question 10. What is double the product of four and five? What is twice the product of four and five?



And that's it - the end of Round 1. I thought some of those were pretty tricky. Anyway we'll soon find out how you got on because Matrix is just burning to give you the answers - beginning with number one...

MATRIX: Answer: 4cm.

RALPH: Number 2.
MATRIX: Answer: 15.

RALPH: Number 3.
MATRIX: Answer: 5p.

RALPH: Number 4.
MATRIX: Answer: 366.

RALPH: Number 5.
MATRIX: Answer: 10p.

RALPH: Number 6.
MATRIX: Answer: 10.

RALPH: Number 7.
MATRIX: Answer: $Y = 7$.

RALPH: Number 8.
MATRIX: Answer: 0.8.

RALPH: Number 9.
MATRIX: Answer: 45.

RALPH: And finally, number 10.
MATRIX: Answer: 40.

RALPH: Now I can honestly say that if you got all 10 of those right you must be well on your way to being a mental maths mastermind! That's one point for every right answer. Count your Round 1 scores!

OK if you've worked out your first round scores we can go straight on to...

Round 2 - On the mail trail!

Now, we're going to be delivering mail round the country at top speed. Everybody into the mail van then, there's no time to lose if we're going to get the post there on time! And off we go! Now this is where the first question of the round starts. It's about the number of mailbags that we're carrying. We've started off with 12, so keep that number firmly fixed in your head.

OK this is our first stop. We've got to deliver six bags here and pick up 12 new ones. Deliver six, pick up 12. Work out how many mailbags we've got in the van now. Work it out in your head but you can write down your answer if you like.



Second stop then. We deliver nine bags and pick up three more. Deliver nine, pick up three. Work out how many mailbags are in the van now. You'll have to hurry because we'll be making our third stop any minute now.

Here we are. We only deliver four this time, but we pick up five more. Deliver four, pick up five.

And here we are safe and sound, back at base. Now what I want to know is, how many mail bags are we going to have to unload? Write your answer down now.

Well, I hope you managed to keep all your thoughts straight while we were whizzing about like that. Well, we'll soon find out how you did. Matrix, give us the answer!

MATRIX: There were 12 mailbags on the van to begin with. At the first stop we delivered 6 and picked up 12 more. So then there were 18 mailbags onboard. At the next stop we delivered 9 and picked up 3, which meant that there were 12 mailbags in the van. At the third stop we delivered 4 and picked up 5, which made 13 mailbags. And those 13 mailbags had to be unloaded when we got back to base.

RALPH: So 13 is the correct answer. If that was what you wrote down you gain five points for it. Still another chance to gain points in this round though with question number two. And this one's about how far the van travelled in our mailbag journey.

Matrix drove us round extremely fast at an average speed of 70km/h - 70km/h - and altogether the journey took three hours 30 minutes to complete. What you have to work out is how far did the van travel in those three-and-a-half hours? Listen again. The van drove for three hours 30 minutes at an average speed of 70km/h. How far did it travel in that time?

I hope you've had time to work it out because Matrix is on his way with...

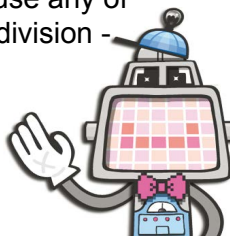
MATRIX: The answer! The van travelled at an average speed of 70km/h for 3 hours 30 minutes. So $70 \times 3 = 210\text{km}$. Then, in the extra 30 minutes, it travelled half of 70km, which is 35km. So, altogether in the three-and-a-half hours, it travelled $210 + 35 = 245\text{km}$.

RALPH: 245km - that's quite a distance! If you managed to work it out give yourself five more points. And that, believe it or not, is the end of the second round. So work out your scores for Round 1 and 2.

I wonder if anyone has scored full points so far. That really would be something. And yet there are 20 more points to come, just as soon as we start...

Round 3 – Juggling numbers!

Right, now the rules for number juggling need a bit of thought. Matrix is going to nominate three numbers which you then have to juggle around. You can use any of the four mathematical operations - addition, subtraction, multiplication or division - and try to reach the target number. So grab your pencil and paper. Matrix, the numbers please!





MATRIX: 24, 4, and 6.

RALPH: 24, 4, and 6. Write them down. And now Matrix the target number?

MATRIX: 0.

RALPH: Zero - I think it's the first time we've had zero as a target number, so it's definitely a bit of a challenge. You've got 30 seconds to juggle 24, 4 and 6 and find a way of making them come to 0. Start juggling those numbers now!

Time's up! If you haven't written down your answer you better sit back and listen to Matrix because he's going to explain exactly how to do it.

MATRIX: $24 \div 6 = 4$; $4 - 4$ is 0!

RALPH: Not as difficult as it sounded that one. But, still worth a full ten points. Unfortunately if you didn't make your numbers come to zero then *you* get zero - zero points!

Question two then - let's have those numbers, Matrix.

MATRIX: 3, 12, and 30.

RALPH: 3, 12, and 30. Write them down. And what's the target?

MATRIX: 26.

RALPH: Go for it then! Try and make 26 by juggling the numbers 3, 12 and 30. You've got one minute starting now.

Well that brings us to the end of the quiz and that was your final chance to earn 10 points. Let's see if you managed it. Matrix, the right answer please.

MATRIX: First divide 12 by 3. That equals 4. Then subtract the 4 from 30. That leaves you with 26.

RALPH: Ah, I see. Divide 12 by 3 which gives you 4. And take that 4 away from 30 and you've got the target number 26. Very clever! So it really is worth 10 points. That's the end of Round 3 and the end of the quiz for now. Work out your score for the contest.

MATRIX: Goodbye everybody! Keep juggling till next time!

