

Maths Quiz – TopQuants Autumn Event 2015

Stichting Nederlandse Wiskunde Olympiade

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Rules

- Every question has two possible answers: A or B
- For every question the available time is 20 seconds
- When the time is over, put up your voting sign in the air
- If you got the wrong answer, put your voting sign on the floor
- If you got the right answer, keep playing in the next question



Question 0

Warming-up



Question 0 – Warming-up

When was TopQuants founded?

A

2011

B

2012



Solution question 0

- TopQuants was founded in 2011.

Conclusion: A



Question 1

Calendar



Question 1 – Calendar

In 2015, 11 May was a Monday. Which day of the week was 11 August 2015?

A

Sunday

B

Tuesday



Solution question 1

- There are 31 days in May, 30 days in June, and 31 days in July.
- In total $92 = 7 \cdot 13 + 1$ days.
- So 11 Augustus was one weekday later than 11 May, so it was a Tuesday.

Conclusion: B



Question 2

Expansion



Question 2 – Expansion

A rectangular grid becomes 25% larger if you add a column, and 10% larger if instead you add a row. How much larger would be original grid become when you add both a row and a column?

A

32,5%

B

37,5%



Solution question 2

- The grid becomes 25% larger if you add a column, so it has four columns to start with.
- And 10% larger if you add a row, so it has ten rows.
- The number of squares in the grid was at first $4 \times 10 = 40$, and after the expansion it is $5 \times 11 = 55$.
- So the grid becomes $\frac{15}{40} = \frac{3}{8}$ larger.
- That's 37,5%.
- Alternative solution: $1,25 \times 1,10 = 1,375$.

Conclusion: B



Question 3

Pet shop



Question 3 – Pet shop

At the pet shop every 5 euro you spend will give you a stamp. One bag of cat litter is 12.45 euro. How many bags would you have to buy to spend exactly a multiple of 5 euro?

A

20

B

100



Solution question 3

- It has to be a multiple of 500 in cents.
- One bag is 1245 cent. That is a multiple of 5, but not of 10 or 25.
- So we have to buy 100 bags to spend a multiple of 500 cents.

Conclusion: B



Question 4

Odometer



Question 4 – Odometer

Every night Amy writes down the distance shown on the odometer in her car, leaving out the decimals. On Monday night it is 40 km more than on Sunday night, and on Tuesday night it is 41 km more than on Monday night. Can you be sure that Amy drove for a longer distance on Tuesday than on Monday?

A

Yes

B

No, it could be the other way around



Solution question 4

- If we include the decimals, then for example the odometer would display 1000.0 on Sunday night, 1040.9 on Monday night, and 1081.0 on Tuesday night.
- In that case she drove for 40.9 km on Monday and for 40,1 km on Tuesday.

Conclusion: B



Question 5

Ski lift



Question 5 – Ski lift

I'm in a ski lift in chair number 14. Meanwhile I pass chair number 19, which is moving in the reserve direction. One minute later I pass chair number 18. How many minutes after passing chair 18 I arrive at terminal?

A

2

B

4



Solution question 5

- Every minute I pass another chair.
- After chair number 18 this will first be number 17, then 16, then 15, then 14. That is my own chair!
- The moment my chair passes itself, is the moment I arrive at terminal. This is 4 minutes after passing chair 18.

Conclusion: B



End

