

Linear equations 2 (Junior UKMT)

These questions must be attempted **without a calculator**

Topics covered in the questions below may not necessarily be from the topic of the title.

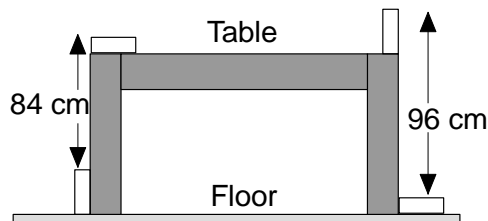
1. What is the value of $101 + 2002 + 30003 + 400004 + 5000005$?
- A 5432115 B 15012345 C 5432345 D 5234325 E 54321012345

2. Which of the following has the smallest value?

A $\frac{1}{2} - \frac{1}{3}$ B $\frac{1}{3} - \frac{1}{4}$ C $\frac{1}{4} - \frac{1}{5}$ D $\frac{1}{5} - \frac{1}{6}$ E $\frac{1}{6} - \frac{1}{7}$

3. Four identical blocks of wood are placed touching a table in the positions shown in this side-on view.

How high is the table?



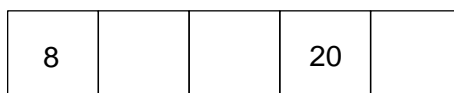
- A 84cm B 87cm C 90cm D 93cm E 96cm

4. What is the value of $2^8 \div 8^2$?

A $\frac{1}{4}$ B $\frac{1}{2}$ C 1 D 2 E 4

5. When the diagram below is complete, the number in the middle of each group of 3 adjoining cells is the mean of its two neighbours.

What number goes in the right-hand end cell?



- A 12 B 14 C 16 D 24 E 28

6. Four of these calculations give the same answer. Which is the odd one out?
 A $2 \times \sqrt{64}$ B $22 - 2 \times 3$ C 2^4 D $5^2 - 3^2$ E $4 + 4 \times 2$

7. For how many positive values of n are both $\frac{1}{2}n$ and $2n$ three-digit whole numbers?
 A 0 B 150 C 200 D 300 E 500

8. In a 7-digit numerical code each group of four adjacent digits adds to 16 and each group of five adjacent digits adds to 19.

What is the sum of all seven digits?

- A 21 B 25 C 28 D 32 E 35

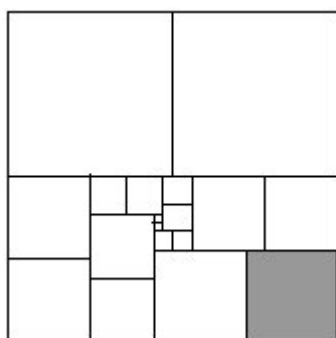
9. Tickets for a school play cost £3 for adults and £1 for children. The total amount collected from ticket sales was £1320. The play was staged in a hall seating 600, but the hall was not completely full.

What was the smallest possible number of adults at the play?

- A 358 B 359 C 360 D 361 E 362

10. A large square is divided into adjacent pairs of smaller squares with integer sides, as shown in the diagram (which is not drawn to scale). Each size of smaller square occurs only twice.

The shaded square has sides of length 10. What is the area of the large square?



- A 1024 B 1089 C 1156 D 1296 E 1444