

North London Collegiate School



Founded 1850

11+ Entrance Examination

Mathematics

December 2020

1 hour

First name:

Last name:

Candidate number:

- Write all of your work in the spaces provided. Do NOT use rough paper.
- You may write in pen or pencil.
- Calculators are NOT allowed.
- Write your answers on the lines provided. If you have to change an answer, cross out the old answer and underline your new answer.
- If you cannot do a question, move on and come back to it later.
- You may get some marks for incomplete answers if the working out is clear.
- Do not worry if you do not complete the entire paper.

1 Fill in the blanks with one number:

(a) $201 - 198 = \boxed{}$

(b) $53 + 28 = \boxed{} \times 3$

(c) $0.8 + \frac{\boxed{}}{10} = 2$

Without doing any long multiplication fill in the blank with one number:

(d) $696 \times 313 = 232 \times \boxed{}$

2 (a) Write 0.04 as a fraction and simplify your answer.

Answer:

(b) How many eighths are there in $2\frac{1}{4}$?

Answer:

3 If 7 bananas cost 98p, how much change would I get from £10 if I buy 13 bananas?

Answer:

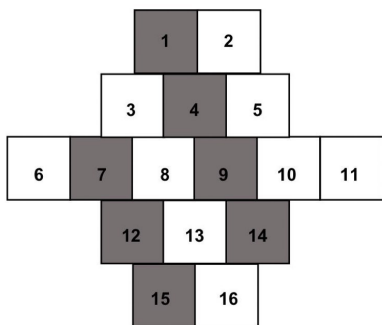
4 Look at the diagram below.

(a) What fraction of the shaded squares contain an even number?

Answer:

(b) What fraction of the squares containing prime numbers are shaded?

Answer:



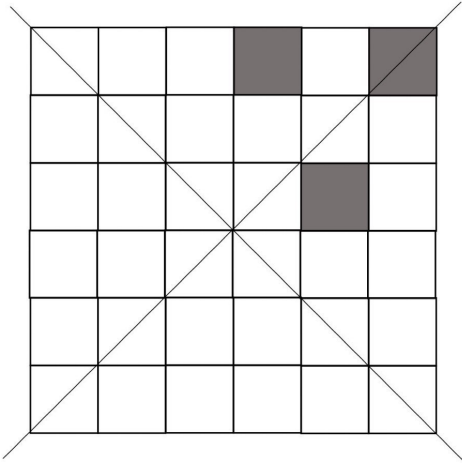
5 Which of the following are equivalent to $\frac{2}{5}$? Circle all the correct answers:

2.5 $\frac{2+10}{5+10}$ $\frac{2 \times 3}{5 \times 3}$ 0.4 $\frac{2^2}{5^2}$ 25%

- 6 A gallery has a collection of 120 paintings, some of which are by French artists. 40% of the paintings are landscapes; the rest are still lifes. Of the landscapes, 25 paintings are by French artists. In total there are 40 paintings by French artists. How many still lifes are there by artists who are **not** French?

Answer:

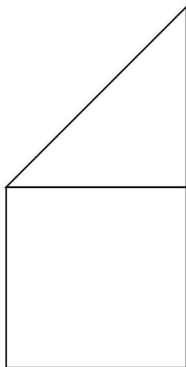
- 7 Shade as few extra squares as you can so that the diagonals are lines of symmetry.



- 8 Thomas and Gerald meet up to eat pieces of cheese. Thomas is greedy: for every 3 pieces of cheese Gerald eats, Thomas eats 5. The two of them eat 104 pieces of cheese in total. How many more pieces of cheese did Thomas eat than Gerald?

Answer:

- 9 The diagram below shows a triangle on top of a square. The height of the triangle is the same length as the base of the triangle. The total area of the shape is 24 cm^2 . What is the height of the triangle?

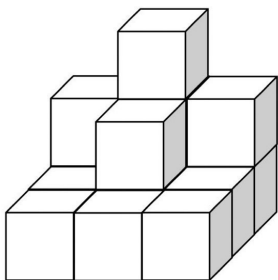


Answer:

- 10 To make enough cake for 15 people, 650 g of flour is needed.
What weight of flour would be needed to make enough cake for 18 people?

Answer:

- 11 A building block from a toy is made up of 14 cubes stuck together as shown below. I want to paint all the visible parts of the building block, including the bottom. How many cube faces do I need to paint?



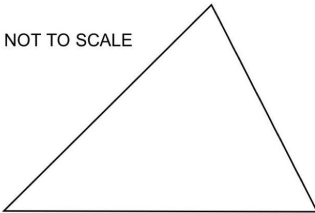
Answer:

- 12 There are 180 pupils at a particular school: 52 pupils play the piano and 38 pupils play the violin. $\frac{1}{4}$ of the pianists play the violin. How many pupils at the school play neither the piano nor the violin?

Answer:

- 13 The sum of two angles in a triangle is three times the third angle. The largest angle in the triangle is 25° greater than the second largest angle. Find the angles of the triangle.

NOT TO SCALE



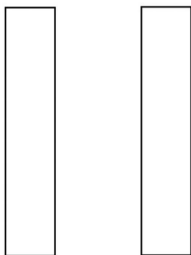
Answer: The angles are,,

- 14 Denise Ball won the singles competition of a local tennis tournament, for which she got $\frac{1}{5}$ of the total prize money. She also won the doubles competition for which she got $\frac{1}{15}$ of the total prize money. Denise got £360 altogether. How much was the total prize money?

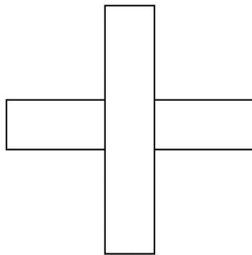
Answer:

15 Ruyi has two identical rectangular strips of card. She experiments by laying the strips of card on a table in two different arrangements.

The two strips in Arrangement 1:



The two strips in Arrangement 2:



A different area of table is covered by the strips in the two arrangements. The area in Arrangement 2 is $\frac{9}{10}$ of the area in Arrangement 1. The length of each strip is 15 cm.

What is the area of table covered in Arrangement 2?

Answer:

- 16** At Teachem High, 20% of the pupils normally at school are in Year 7. One day some Year 7 girls miss school for a sports match. The total number of pupils left at school is then 400 and the proportion of these pupils who are in Year 7 is 10%. How many pupils are normally at school in total?

Answer:

END OF PAPER