LATYMER UPPER SCHOOL
INDEPENDENT & CO-EDUCATIONAL

11+

Entrance Examination

MATHEMATICS

SAMPLE

Time allowed: 60 minutes

Instructions
- Calculators are NOT allowed. You may use a ruler.
- Attempt all questions.
- If you cannot do a question, go on to the next one and try again later on.
- Do not ask the teacher to explain a question to you.
- If you finish before the end, check your answers and then wait quietly in your place.
- If you do not finish, or if you cannot understand all the questions, do not worry.

Section A
- You should spend about 20 minutes on this section. Each question is worth 1 mark. There are **20** marks for section A.
- Each question is provided with FIVE possible answers, only ONE answer is correct.
- Write the correct answer in the box on the right, if you make a mistake, rub it out and try again.

Section B
- You should spend about 40 minutes on this section. Marks for each question are shown in square brackets after the question. There are **50** marks for section B
- Write your answers **and working** in the spaces provided. **DO NOT** use extra paper.

Section A

1.   What is 463 + 179?

A: 642   B: 542   C: 532   D: 632   E: 742

2.   Subtract 328 from 441.

A: 123   B: 113   C: 223   D: 127   E: 769

3.   What is 24×65?

A: 1600   B: 1560   C: 1220   D: 1320   E: 1400

4.   John divides 293 by 8. What remainder should he get?

A: 1   B: 2   C: 3   D: 4   E: 5

5.   What is $391 \div 17$?

A: 13   B: 18   C: 23   D: 33   E: 27

6. What number is halfway between $5\frac{1}{2}$ and $12\frac{1}{2}$?

A: 8   B: $8\frac{1}{4}$ C: $8\frac{1}{2}$ D: 9   E: $9\frac{1}{2}$

7. What is two-sevenths of 133?

A: 38   B: 39   C: 40   D: 95   E: 19

8. Three-quarters of a number is 132. What is the number?

A: 176   B: 180   C: 99   D: 108   E: 170

9. Which of the following is the smallest?

A: 4×9 B: 5×7 C: $43 - 3 \times 4$ D: $7^2 - 4^2$ E: 6×5.5
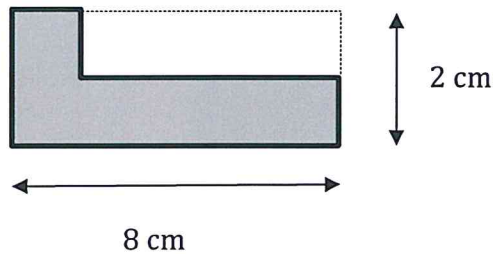
10. Annabel returns from the shops at 1:35pm, 3 hours 55 minutes after she left. At what time did she leave?

A: 10:40am   B: 9:20am   C: 9:30am   D: 9:40am   E: 9:50am

11. Two fifths of a number is 3 more than one third of the number. What's the number?

A: 15   B: 50   C: 48   D: 45   E: 42

12. What is the perimeter of the shape below?

2 cm

8 cm

A: 10cm   B: 16cm   C: 20cm   D: 17cm   E: 13cm

13. I buy 4 kumquats at 65 pence each and 7 guavas at 55 pence each. How much change to I get from a £10 note?

A: £4.45   B: £4.55   C: £3.45   D: £3.55   E: £3.65

14. Two whole numbers add together to make 19. What is the largest possible answer when the two numbers are multiplied together?

A: 48   B: 361   C: 190   D: 99   E: 90

15. Work out 80% of £425.

A: £400   B: £340   C: £382.50   D: £255   E: £85

16. Charlie runs 3 times as fast as his baby sister Kate, and five times as fast as Gerald, their pet tortoise. They all start a 120m race at the same time. When Charlie has finished, how far apart are Kate and Gerald?

A: 72m   B: 48m   C: 40m   D: 24m   E: 16m

17. The mean of four **different** positive **odd** numbers is 6. What's the least amount that the largest number could be?

A: 15   B: 18   C: 13   D: 11   E: 9

18. What is the area of the shaded rhombus below? (Diagram not to scale)

6 cm
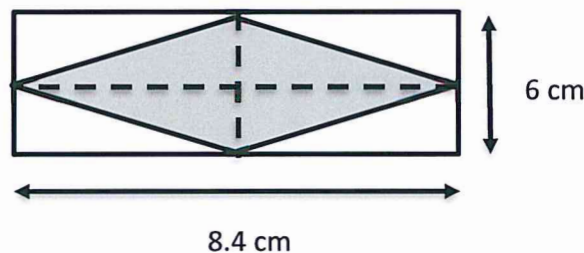
8.4 cm

A: 14.4 cm^2 B: 25.2 cm^2 C: 28.4 cm^2 D: 37.2 cm^2 E: 50.4 cm^2
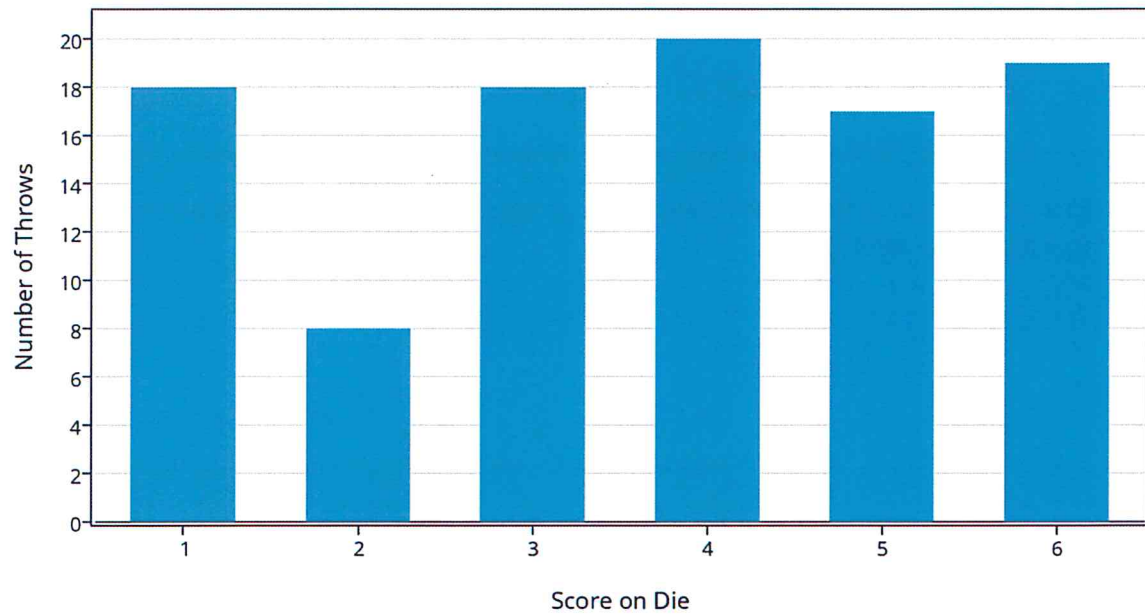
19. How many different ways are there of paying exactly 30p using 5p and/or 2p pieces?

A: 1   B: 2   C: 3   D: 4   E: 5

20. In an isosceles triangle, twice one of the angles is five times as big as another. Which of the following is **not** a possible size for one of the angles?

A: 100°   B: 75°   C: 40°   D: 30°   E: 20°

Section B

Score on Die

a) How many times did Clare throw a 6?

Answer:………………………………………………….. [1 mark]

b) Do you think this die is fair? Explain your answer.

[1 mark]

c) Dougal borrows the die and throws it 800 times. How many times would you expect him to throw an even number?

Answer:………………………………………………….. [1 mark]

22.   a) Work out 23×291

Answer:..   [2 marks]

b) Subtract -55 from 127.

Answer:..   [1 mark]

c) What is the remainder when 431 is divided by 13?

Answer:..   [2 marks]

23.   a) It takes Mr MacMahon 6 days to write 15 entrance exam questions. How long would it take him to write 20 entrance exam questions?

Answer:……………………………………………………..   [2 marks]

b) Miss Andrew and three colleagues can write 100 multiple choice questions in 9 days. How long would it take to write the same number of questions if one of Miss Andrew's colleagues was sick?

Answer:……………………………………………………..   [2 marks]

c) Mr Cheung can write a haiku in half the time it takes him to write a limerick. It takes him 9 days to write a total of 3 haiku and 3 limericks. How long would it take him to write 5 haiku and 3 limericks?

Answer:……………………………………………………..   [2 marks]

24. When you multiply together the digits of the number 275, you get the answer $2 \times 7 \times 5 = 70$.

a) How many 3 digit numbers can you find whose digits multiply together to give 45?

[2 marks]

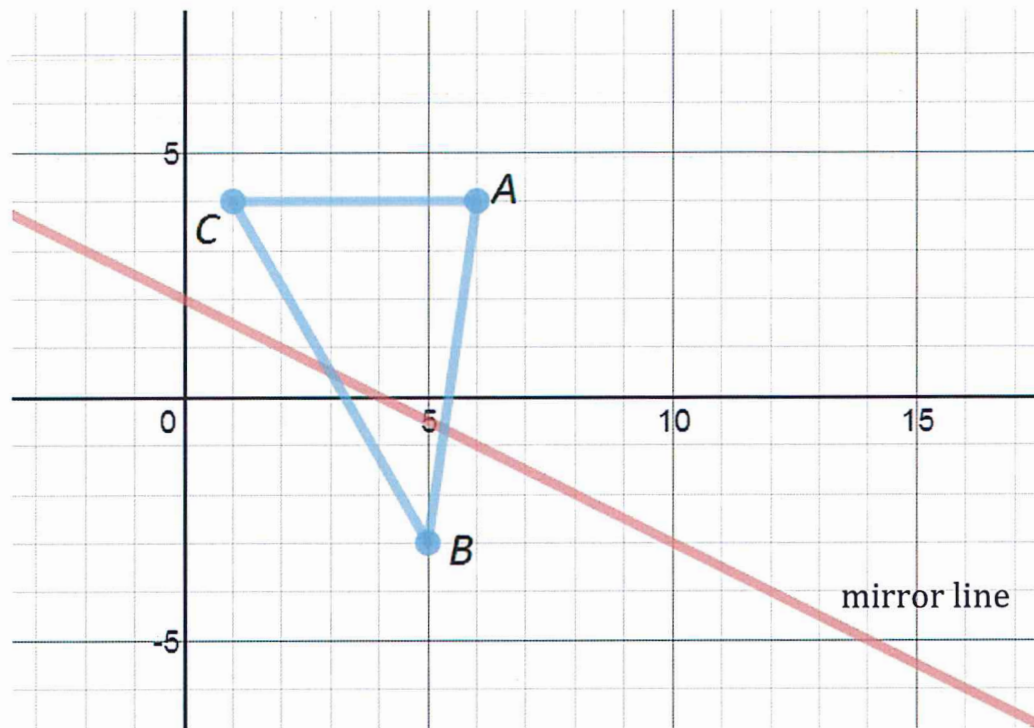b) Explain why you can't find a 3 digit number whose digits multiply together to give 55.

[1 mark]

c) I'm thinking of a three digit number. All the digits are different, and the difference between the smallest and largest digits is 2. My number is even, and more than 600. When I multiply together all the digits I get 210. What is my number?

Answer:………………………………………………………….. [2 marks]

25.

Look at the diagram above.

a) What are the coordinates of the point *B*?

Answer:………………………………………………………….. [1 mark]

b) On the diagram, show the position of the triangle when it is reflected in the diagonal mirror line.

[2 marks]

26. a) Sam thinks of a number. When he doubles the number and then subtracts 12, he gets the answer 26. What was his number?

Answer:…………………………………………………….. [2 marks]

b) Shania thinks of a number. When she subtracts 19 from the number and then doubles the answer, she gets 66. What was her number?

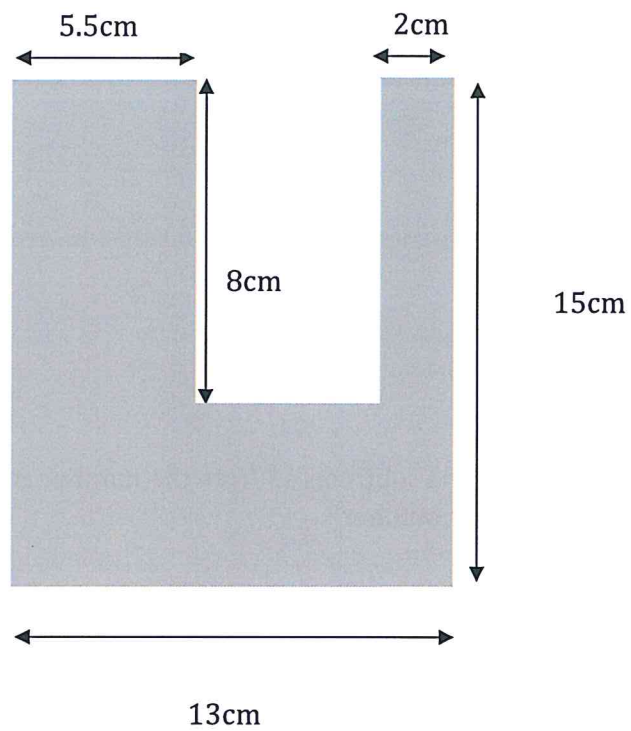Answer:…………………………………………………….. [2 marks]

c) I'm thinking of a number. When I double the number and subtract the answer from 25, I get triple my original number. What was my number?

Answer:…………………………………………………….. [2 marks]

27. What is the area of the shape below?

5.5cm   2cm

8cm

15cm

13cm

(Diagram not to scale)

Answer:...   [3 marks]

28. Jonny invents a rule for combining two positive whole numbers. First of all he multiplies them together, and then he adds together the digits of the answer.

So when he starts with the numbers 7 and 13, he gets the answer 10, because $7 \times 13 = 91$, and then $9 + 1 = 10$.

a) What do you get when you combine 12 and 8 using this rule?

Answer:…………………………………………………….. [1 mark]

b) Find two **different** numbers that combine together to give 7.
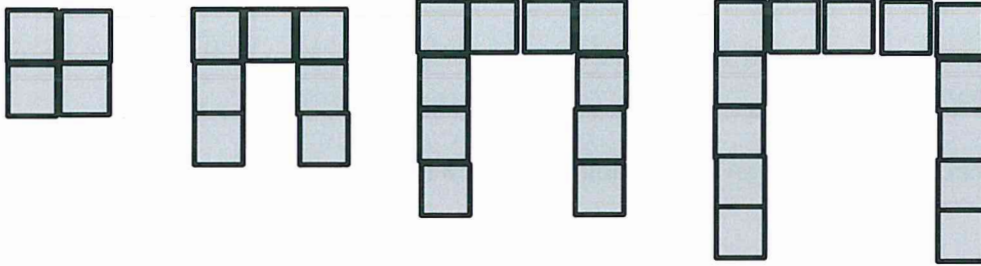
Answer:…………………………………………………….. [1 mark]

c) Jonny says, "whenever you combine a two digit number with 9 using this rule, you always get the answer 9." Is he correct? Explain your answer

[2 marks]

d) Find a number that gives the answer 13 when it is combined with itself.

[1 mark]

29. Bobby makes some patterns using grey tiles. The first four patterns are shown below:

a) Complete the table below:

Pattern number	1	2	3	4
Number of tiles	4	7		

[1 mark]

b) How many tiles will there be in the 8th pattern?

Answer:…………………………………………………….   [1 mark]

c) How many tiles will there be in the 19th pattern?

Answer:…………………………………………………….   [1 mark]

d) Zack makes a pattern like the one above using 100 tiles. Which pattern number is this?

Answer:…………………………………………………….   [2 marks]

e) Neetha makes a pattern like the ones above and says, "there are 200 tiles in my pattern." How can you tell that she is wrong?

Answer:…………………………………………………….   [1 mark]

30. Paddy is cycling steadily round a track. He completes 5 laps in 6 minutes.

Julian is also cycling steadily round the track, in the same direction. He completes 6 laps in 5 minutes

a) At 10:00am exactly, Paddy is just ahead of Julian on the track. By 10:10, how many times will Julian have overtaken Paddy?

Answer:………………………………………………………….. [2 marks]

On another day, Mia is cycling steadily around the track. She does one lap every 72 seconds. Gareth is cycling steadily round the track in the opposite direction.

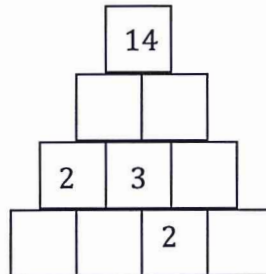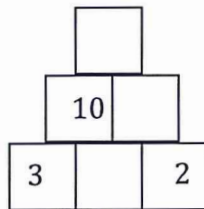b) If they meet each other every 40 seconds, how long does it take Gareth to do a lap of the track?

Answer:………………………………………………………….. [2 marks]

31. The diagram below is made using the following rule: the number in each square is the sum of the numbers in the two squares below it:

```
        22
      16   6
    14   2   4
```
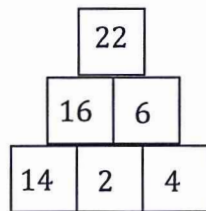
a) Complete the diagrams below using the same rule:

```
        □
      10   □
    3    □    2
```

```
          14
       □     □
     2    3    □
   □    □    2    □
```
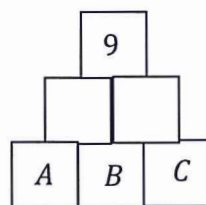
[2 marks]

b) The same rules are used in the diagram below. Also,

- the numbers in the boxes marked A, B and C are all positive whole numbers;
- the number in box A is smaller than the number in box C.

One possibility for the numbers in boxes A, B and C is:

- A = 2   B = 2   and   C = 3.

What are the other possible combinations for the numbers in boxes A, B and C?

```
        9
      □   □
    A   B   C
```

[2 marks]