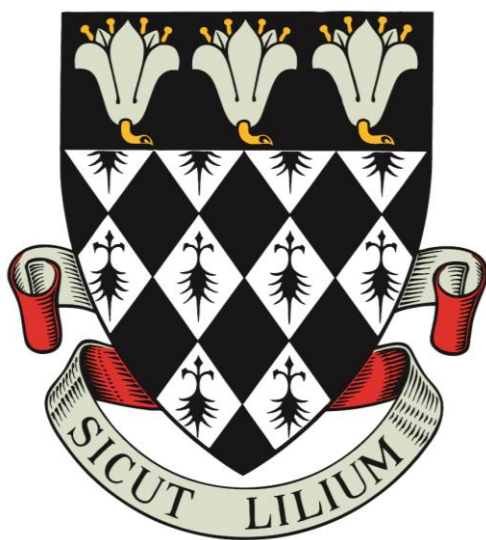


First name: _____ Surname: _____

Current school: _____



Magdalen College School

11+ / Pre-Test Entrance Examination

Specimen Paper

Mathematics

Please read the following information carefully before the examination starts.

- Make sure you have filled in the details at the top of this page.
- This examination is **60 minutes** long.
- Calculators are **not** allowed.
- This test is designed to be challenging, so you may not find all the questions straightforward and you may not finish the whole paper.
- Read each question very carefully, think for a while and if you still do not understand what you need to do, then move on to the next question.
- All working and calculations should be written in the spaces provided on this paper. Marks are awarded for correct working, even if you don't get as far as an answer.
- The number of marks available for each question is shown in square brackets, like this: [3]. Please aim to try all **22** questions.
- Work through the paper steadily and carefully. If you have time at the end, go back and try to tackle any questions you did not find so easy when you first saw them.
- Good luck!

1. Work out:

(a) $153 + 78$

Answer (a): _____ [1]

(b) $185 - 43$

Answer (b): _____ [2]

(c) $532 - 85$

Answer (c): _____ [2]

(d) 53×9

Answer (d): _____ [2]

(e) 32×23

Answer (e): _____ [2]

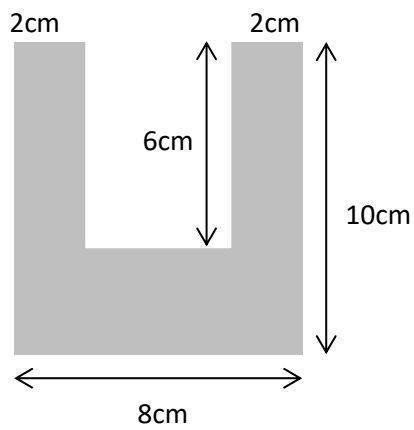
(f) $238 \div 7$

Answer (f): _____ [2]

(g) 17^2

Answer (g): _____ [2]

2. Find the area and perimeter of this shape:



area = _____ cm²

perimeter = _____ cm
[6]

3. Calculate, giving your answer as a fraction as simply as possible:

(a) $\frac{5}{12} + \frac{4}{12}$

Answer (a): _____ [2]

(b) $\frac{1}{6} + \frac{1}{3}$

Answer (b): _____ [3]

4. Find:
(a) 30% of £70

Answer (a): £ _____ [2]

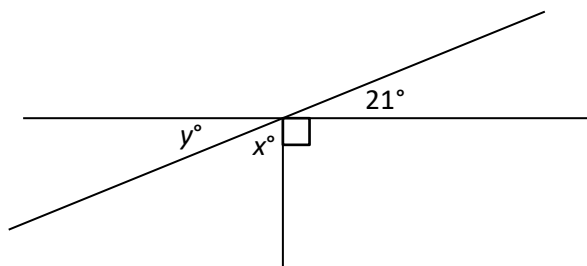
- (b) a fifth of £70

Answer (b): £ _____ [2]

- (c) 80% of a half of £70

Answer (c): £ _____ [2]

5. Find the missing angles in the diagram below (which is not to scale).



Answer: $x =$ _____ $^{\circ}$ [2]

Answer: $y =$ _____ $^{\circ}$ [2]

6. Find the next 2 numbers in the following sequences:

(a) 3, 7, 11, 15, 19, ____, ____

(b) 3, 6, 12, 24, ____, ____

(c) 3, 5, 9, 15, 23, ____, ____

(d) $\frac{1}{5}, \frac{3}{10}, \frac{5}{17}, \frac{7}{26}, \text{---}, \text{---}$

[8]

7. Complete each row in the table below, giving the equivalent fraction, decimal or percentage. Ensure fractions are fully simplified.

| Fraction | Decimal | Percentage |
|-----------------|---------|------------|
| | | 50% |
| | 0.25 | |
| $\frac{2}{5}$ | | |
| $\frac{13}{20}$ | | |

[6]

8. The table shows part of the railway timetable from Edinburgh to St Andrews. Some trains stop at every station and others are express trains. All stopping trains take the same time between each station as each other.

| | Express | Stopping | Express | Stopping | Express | Stopping |
|------------|---------|----------|---------|----------|---------|----------|
| Edinburgh | 13:18 | 13:43 | 14:24 | 14:41 | 15:20 | 15:34 |
| Haymarket | | 14:06 | | 15:04 | | |
| Kircaldy | | 14:18 | | 15:16 | | |
| Ladybank | | 14:23 | | 15:21 | | |
| St Andrews | 14:02 | 14:38 | 15:08 | 15:36 | 16:04 | |

(a) How many minutes does it take to travel between Edinburgh and Kircaldy?

Answer: (a) _____ [1]

(b) Complete the times in the boxes in the table above for the stopping train that leaves Edinburgh at 15:34

[3]

(c) How much longer does the stopping train take than the express train for the journey from Edinburgh to St Andrews?

Answer (c): _____ [2]

(d) James arrives at Edinburgh airport at 13:05. It takes him 27 minutes to get from the plane and collect his baggage. It then takes him 45 minutes to get to Edinburgh railway station. How long does he have to wait for the next train to St Andrews?

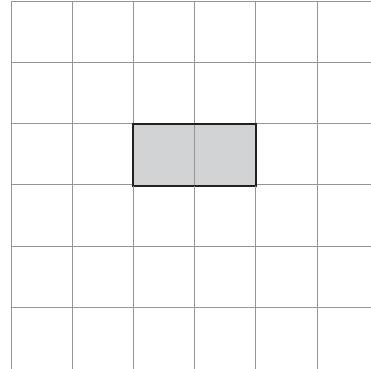
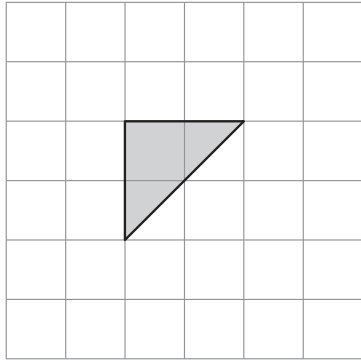
Answer (d): _____ [3]

9. For each shape draw a rectangle that has the same area as the shape on the left.

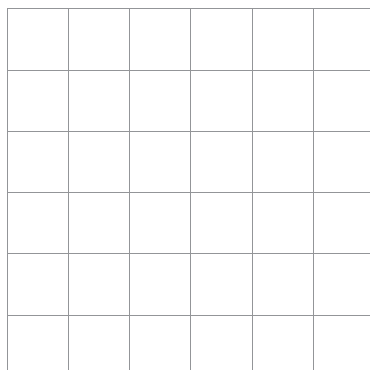
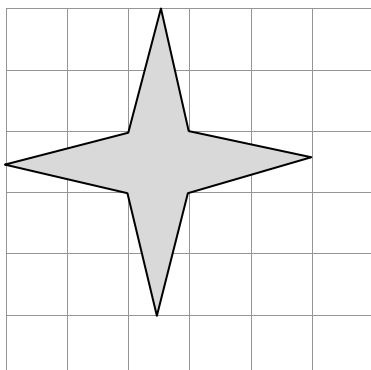
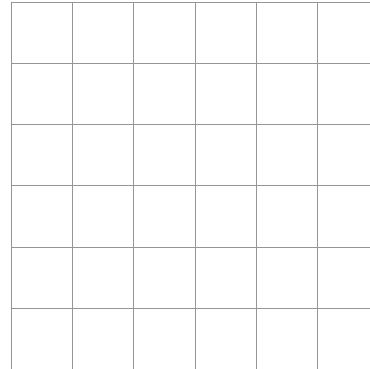
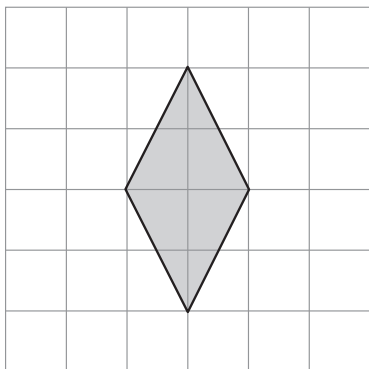
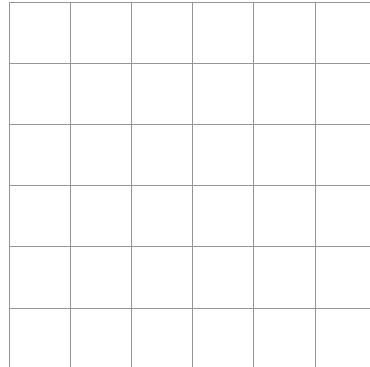
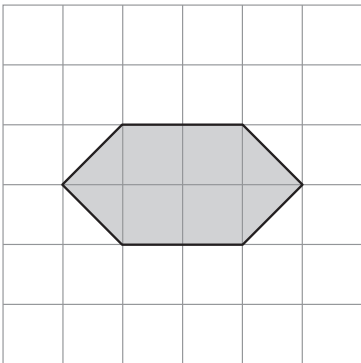
The first one is done for you as an example.

Shape

Rectangle



Example



[6]

10. A traditional punt is 7.45 m long. How long is this:

(a) to the nearest metre?

Answer (a): _____ m [1]

(b) to one decimal place?

Answer (b): _____ m [1]

(c) in cm?

Answer (c): _____ cm [1]

11. Put these numbers in order from smallest to largest:

60%

$17/25$

$2/3$

0.66

Answer: _____ < _____ < _____ < _____ [3]
smallest smallest largest largest

12. *Ten green bottles hanging on a wall
Ten green bottles hanging on a wall
If one green bottle should accidentally fall,
There'd be nine green bottles hanging on
the wall
Nine green bottles...*



If the first bottle fell at ten past five in the morning (5.10am) and the others fell down at five minute intervals, at what time would the last bottle fall?

[3]

13. James was given £15 to buy supplies for the school year. He chose to spend it on pens and pencils.



Each pen costs £1.25



and each pencil costs 80p

(a) If James buys 5 pens and 7 pencils, how much money will he have left?

Answer (a): £_____ [3]

(b) If instead James buys a set of 5 pencils, what is the maximum number of pens he can buy?

Answer (b): _____ [3]

(c) If instead James ends up with £2.80 left of his money how many pens and how many pencils did he buy?

Answer (c): Pens _____ Pencils _____ [4]

14. 12 boy scouts will eat 30 loaves in 4 days.

(a) How many boy scouts will eat 60 loaves in 4 days?

Answer: (a) _____ [2]

(b) How many days will it take 6 boy scouts to eat 30 loaves?

Answer: (b) _____ [2]

(c) How many loaves will 3 boy scouts eat in 8 days?

Answer: (c) _____ [2]

15. Boris uses his calculator to work out the following:

$$12.37 \times 6.8 = 84.116$$

Using Boris's calculation to help you, find:

(a) 1237×68

Answer (a): _____ [2]

(b) $841.16 \div 68$

Answer (b): _____ [2]

16. A square tile has an area of 81 cm^2 .

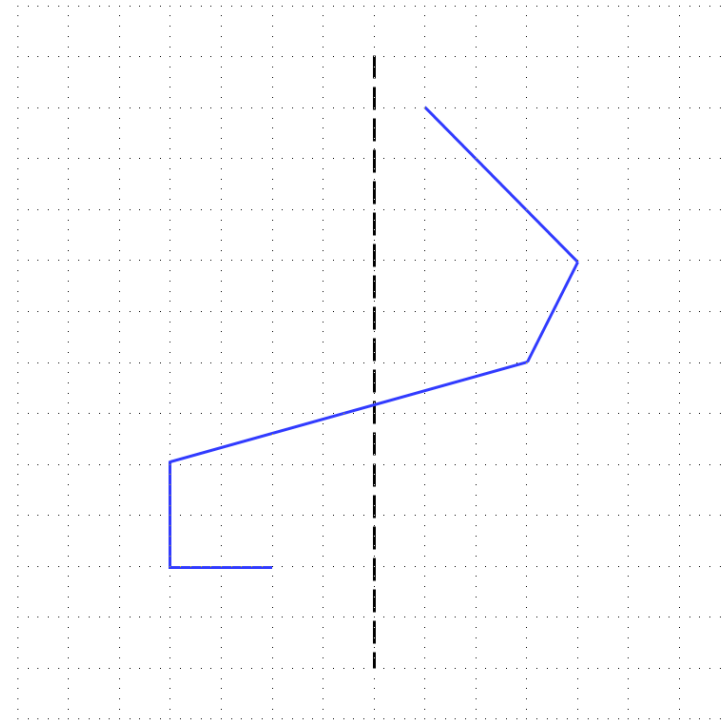
(a) What is the side length of the tile?

Answer (a): _____ cm [1]

(b) Ben has a desk measuring 110 cm by 90 cm. What is the smallest number of these tiles required to completely cover Ben's desk?

Answer (b): _____ [2]

17. The vertical dashed line is a line of symmetry of a shape, which is only partly drawn. Complete the shape on the grid below.



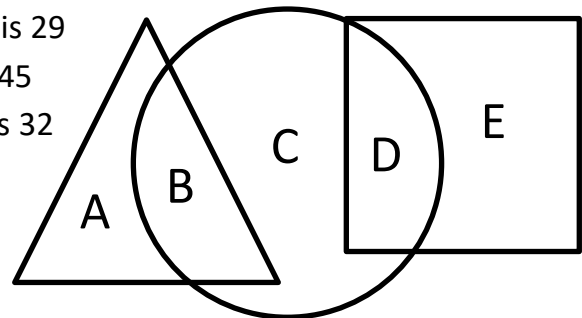
[4]

18. In the diagram each of the letters A to E stands for one of the numbers 13, 14, 15, 16, and 17. Each letter stands for a different number. Find the number corresponding to each letter if:

the total of the numbers in the triangle is 29

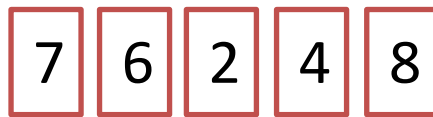
the total of the numbers in the circle is 45

the total of the numbers in the square is 32



Answers: A = _____ B _____ C = _____ D = _____ E = _____ [5]

19. Here are five cards with numbers printed on them.



The cards can be placed in order to form a 5-digit number. For example, the smallest number that could be made with all five cards is



(a) Using all five cards, what is the largest possible odd number?

Answer (a): _____[2]

(b) Using all five cards, what is the number that is closest to 50,000?

Answer (b): _____[2]

(c) Using only two of the cards, what is the largest possible prime number?

Answer (c): _____[2]

(d) Arrange any three of the number cards to give the largest possible answer to this multiplication:

$$\boxed{} \boxed{} \times \boxed{}$$

[3]

20. For each of the following questions you need to find a whole number between 0 and 100 that has the following properties.

- (a) When the number is divided by 4 the remainder is 0.
When the number is divided by 7 the remainder is 6.
When the number is divided by 5 the remainder is 0.
What is the number?

Answer (a): _____[2]

- (b) When the number is divided by 5 the remainder is 4.
When the number is divided by 6 the remainder is 0.
When the number is divided by 7 the remainder is 0.
What is the number?

Answer (b): _____[3]

- (c) When the number is divided by 2 the remainder is 1.
When the number is divided by 3 the remainder is 1.
When the number is divided by 5 the remainder is 0.
When the number is divided by 7 the remainder is 1.
What is the number?

Answer (c): _____[4]

21. Write the whole numbers from 61 to 70 inclusive on the lines below so that each number agrees with the condition on the line where you have written it.

Each line may only have one number, and each number appears only once.

(a) _____ is 1 more than a multiple of 4

(b) _____ is a square number

(c) _____ is divisible by 7

(d) _____ is a multiple of 11

(e) _____ is a prime number

(f) _____ is divisible by 9

(g) _____ has digits which add to give an even number

(h) _____ is divisible by 3

(i) _____ has exactly four factors

(j) _____ is a multiple of 5

22. Place each whole number from 1 to 8 inclusive in one of the blank boxes below to make the calculations correct. The calculations read left to right and top to bottom.

| | | | | |
|---|---|--|---|---|
| | ÷ | | = | |
| - | | | | × |
| | | | | |
| = | | | | = |
| | + | | = | |

[8]

END OF TEST – GO BACK AND CHECK YOUR ANSWERS