

Name:



OUNDLE

School

2021 Junior Entrance Examination
First Form Entry

Mathematics

Time Allowed: 60 minutes

Instructions

- Attempt all questions.
- All working and answers must be shown on this paper. Marks will be given for demonstrating your method.
- Do not spend too long working on any particular question. Do not worry if you do not manage to complete every question.
- You may work in pen or pencil.
- Calculators are **NOT** permitted.

Question 1

- (a) Alice worked out the price of her regular weekly shop at two different supermarkets. At supermarket A her weekly shop would cost £224.04 and at supermarket B it would cost £187.19. How much would Alice save each week if she shopped at supermarket B.

Answer [1]

- (b) Benjamin spent £152.87 on some tropical fish. Charlie paid £239.49 for a fish tank. What was the total they spent altogether?

Answer [1]

- (c) Some bread rolls are sold in packs of 24. How many bread rolls are there in 37 packs?

Answer [1]

- (d) Denise buys 8 guitars at total cost of £3405.60. Find the cost of one guitar.

Answer [1]

- (e) 700 textbooks need to be shipped in boxes. A maximum of 15 textbooks fit in each box. How many boxes are needed?

Answer [1]

Question 2 Work out the following, obeying the correct order of operations.

(a) $-5 + 0$

Answer [1]

(b) 0×8

Answer [1]

(c) $9 - 7 \times 0$

Answer [1]

(d) $15 + 0 \div 3$

Answer [1]

(e) $-2 \times 6 + 9 \times 3$

Answer [1]

(f) $3 - 3 \div 3 + 3$

Answer [1]

Question 3

Insert brackets to make the following statements correct:

(a) $8 \times 4 \div 3 - 1 = 16$

(b) $3 \times 5 - 6 \times 2 - 2 = 16$

[2]

Question 4

A wall can be built by 6 bricklayers in 4 days.
How long would it take 8 bricklayers to build 3 similar walls?

Answer [2]

Question 5

The value of a vase increases from £24,000 to £27,000.
What percentage increase does this represent?

Answer [2]

Question 6

m and n are two *different, positive* whole numbers which make the following statement true

$$5m + 3n = 90$$

Find two possible pairs of numbers which make the statement above true.

First pair $m = \dots\dots\dots$ $n = \dots\dots\dots$

Second pair $m = \dots\dots\dots$ $n = \dots\dots\dots$

[2]

Question 7

The ratio of height to width on a cinema screen is 9:16.
If the cinema screen is 21 feet wider than it is tall, find the perimeter of the screen.

Answer [2]

Question 8

Given that $123 \times 45 = 5535$, write down the missing number in each part.

(a) $123 \times ? = 553.5$

Answer [1]

(b) $12.3 \times ? = 55350$

Answer [1]

(c) $55.35 \div ? = 1230$

Answer [2]

Question 9

In this question you may use the grid below to help you answer the questions.

A straight line passes through the points (1, 1) and (4, 10).

(a) (i) The point (5, a) also lies on the line. Calculate the value of a .

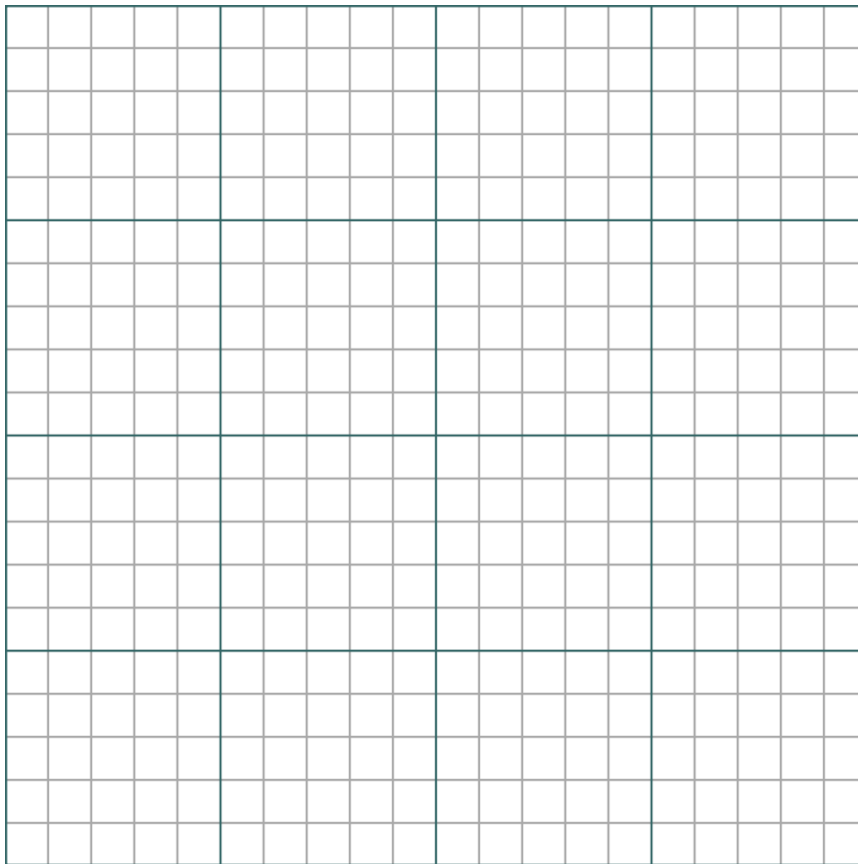
Answer [1]

(ii) The point (b , 19) also lies on the line. Calculate the value of b .

Answer [1]

(b) Another straight line goes through the point (4, 10) and is *perpendicular* to the first line. Give the coordinates of any other point on this second line.

Answer [2]



Question 10

You have the numbers -5 , 4 , 9 and -8 available.
Any of these numbers can be used in each part of the question.

- (a) What is the greatest number that can be obtained by adding two of the above numbers?

Answer: [1]

- (b) What is the least number that can be obtained by adding two of the above numbers?

Answer: [1]

- (c) What is the greatest number that can be obtained by subtracting two of the above numbers?

Answer: [1]

- (d) What is the least number that can be obtained by multiplying two of the above numbers?

Answer: [1]

Question 11

- (a) Which fraction is bigger, $\frac{3}{5}$ or $\frac{7}{9}$?

Answer [1]

- (b) Write down a fraction which is greater than $\frac{3}{13}$, but less than $\frac{4}{13}$.

Answer [1]

- (c) Write down a fraction that is greater than $\frac{1}{7}$, but less than $\frac{1}{5}$.

Answer [1]

- (d) Calculate a quarter of $\frac{1}{5}$.

Answer [1]

- (e) What is the result if one is subtracted from $\frac{3}{4}$?

Answer [1]

Question 12

The symbol $\textcircled{\otimes}$ represents a mathematical operation which finds the value of the product of two positive whole numbers minus their sum:

$$\begin{aligned} \text{ie. } 5 \textcircled{\otimes} 7 &= 5 \times 7 - (5 + 7) \\ &= 35 - 12 \\ &= 23 \end{aligned}$$

For each part, write down the missing value

(a) $8 \textcircled{\otimes} 4 = ?$

Answer [1]

(b) $5 \textcircled{\otimes} ? = 7$

Answer [2]

(c) $? \textcircled{\otimes} 6 = 44$

Answer [2]

**No marks will be awarded for the remaining parts of this question,
and they should only be attempted if you have completed the rest of the paper.**

(d) Find a pair of positive whole numbers, a and b , for which:

(i) $a \textcircled{\otimes} b = 1$

Answer

(ii) $a \textcircled{\otimes} b = 0$

Answer

(iii) $a \textcircled{\otimes} b = -1$

Answer

(e) For part (d)(iii) above, there are many other solutions. Describe all the solutions and try to explain/justify your answer.