EXAM PAPERS PRACTICE

GCSE OCR Math J560

Combining Arithmetic Operations

Answers

"We will help you to achieve A Star "

Answer 1

Given that $1793 \times 185 = 331\,705$

write down the value of

(a) 1.793×185

3DP

$1793 \times 185 = 331.705$

331.705

Answer 2

Write down the reciprocal of 5

$\frac{1}{5}$

RECIPROCAL OF a IS $\frac{1}{a}$

RECIPROCAL OF $\frac{a}{b}$ IS $\frac{b}{a}$

(1)

INDICES

$a^{-p} = \frac{1}{a^p}$

(1)

$a^p \times a^q = a^{p+q}$

Answer 3

The paving slabs cost £8.63 each.

(b) Work out the total cost of the 32 paving slabs.

$32 \times 8.63 = 276.16$

"LONG MULTIPLICATION"

$$\begin{array}{r} 8.63 \\ \times\ 32 \\ \hline 1726 \\ 25890 \\ \hline 27616 \end{array}$$

ESTIMATING

$\simeq 30 \times 10$

$\simeq 300$

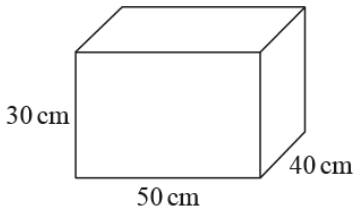
£ 276.16 ✓

(3)

Answer 4

The diagram shows a container for oil.
The container is in the shape of a cuboid.
The container is empty.

Diagram **NOT** accurately drawn



Sally has to fill the container with oil.
A bottle of oil costs £3.50
There are 3000 cm^3 of oil in each bottle.

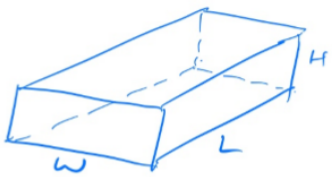
Sally must **not** spend more than £60 buying the oil.

Can Sally buy enough oil to fill the container?
You must show all your working.

$V = 50 \times 40 \times 30 \text{ cm}^3$

CUBOID

$V = L \times W \times H$



$\text{BOTTLES} = \frac{\text{VOLUME}}{3000}$

$= \frac{50 \times 40 \times 30}{3000}$

$= 20$ BOTTLES NEEDED

$\frac{20}{3} \times \frac{20}{0.5}$

$\frac{60}{10}$

$\text{COST} = 20 \times 3.50$

$= £70$

NO, SALLY ONLY HAS £60 AND THE COST TO FILL THE CONTAINER IS £70.

Answer 5

One of the teachers at a school is chosen at random.

The probability that this teacher is female is $\frac{3}{5}$ → $P(\text{MALE}) = \frac{2}{5}$

There are 36 **male** teachers at the school.

Work out the total number of teachers at the school.

$P(\text{MALE}) = \frac{2}{5} = \frac{36}{\text{TOTAL}}$ (×18)

$\text{TOTAL} = 5 \times 18$

$= 90$

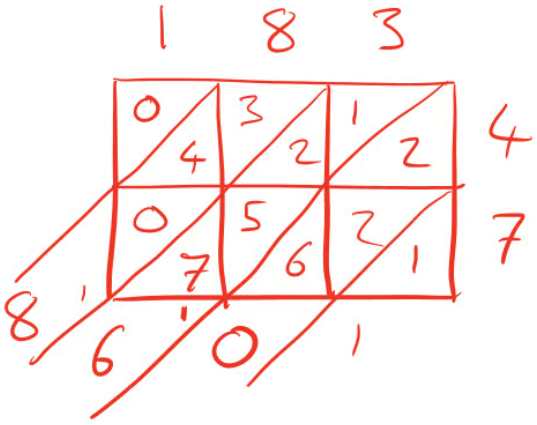
$18 \times 10 = 180$

$180 \div 2 = 90$

$18 \times 5 = 90$

Answer 6

Work out 1.83×47



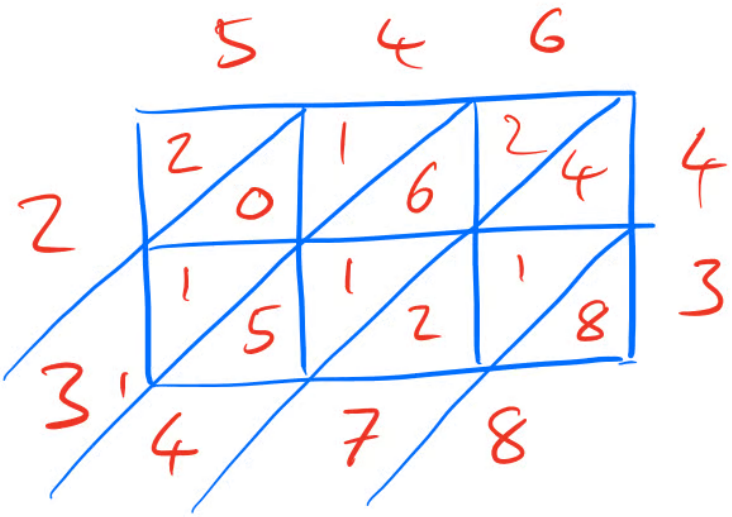
$183 \times 47 = 8601$

$1.83 \times 47 = 86.01$

Answer 7

Work out 54.6×4.3

546 × 43

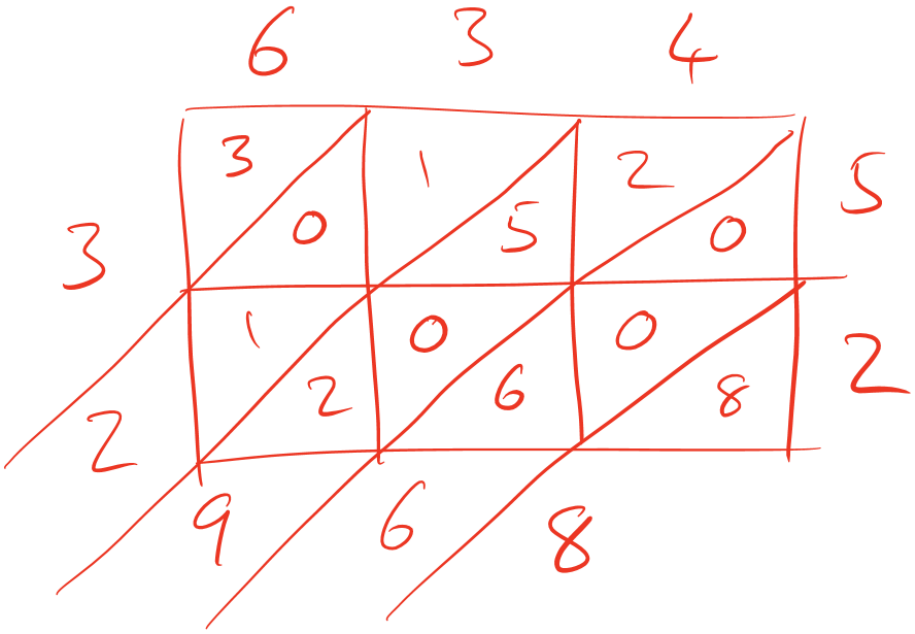


546 × 43 = 23478

54·6 × 4·3 = 234·78

Answer 8

Work out 6.34 × 5.2



$6.34 \times 5.2 = 32.968$

SAME NUMBER OF DECIMAL PLACES IN THE ANSWER

Answer 9

One sheet of paper is 9×10^{-3} cm thick.

Mark wants to put 500 sheets of paper into the paper tray of his printer.
The paper tray is 4 cm deep.

Is the paper tray deep enough for 500 sheets of paper?
You must explain your answer.

THICKNESS OF 500 SHEETS:

$T = 500 \times 9 \times 10^{-3}$

$= 4500 \times 10^{-3}$ MOVE DEC. PT. 3 TO LEFT

$= 4.5$ cm

500 SHEETS IS TOO MANY

SO NO IT'S NOT DEEP ENOUGH.

$T = 4500 \times 10^{-3}$

$T = 4500 \times \frac{1}{1000}$

$= \frac{4500}{1000}$

$= 4.5$ cm

$10^{-3} = \frac{1}{10^3}$

$= \frac{1}{1000}$

Answer 10

Using the information that

$$6.7 \times 52 = 348.4$$

find the value of

(i) 6.7×520

$6.7 \times 52 = 348.4$

$\times 10 \quad \times 10$

$6.7 \times 520 = 3484$

(ii) 67×0.52

$6.7 \times 52 = 348.4$

$\times 10 \quad \div 100 \quad \div 10 \quad (\times 10 \div 100)$

$67 \times 0.52 = 34.84$

(iii) $3484 \div 5.2$

$\frac{348.4}{52} = 6.7$

$\times 10$ $\quad \div 10$ on Bottom $\quad \times 100$

So $\times 10$

$\frac{3484}{5.2} = 670$

Answer 11

The diagram shows a plan of Brian's lawn.

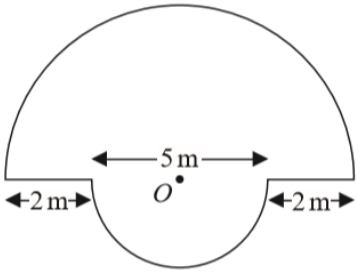


Diagram **NOT** accurately drawn

The edge of the lawn consists of two semicircles and two straight lines.
Each semicircle has centre O.
The diameters of the semicircles are 9 m and 5 m.

Brian is going to put lawn edging around the edge of the lawn.
Lawn edging is sold in 2.4 metre rolls.

Brian has £35

Has Brian got enough money to buy all the rolls of lawn edging he needs?
You must show all your working.

Lawn edging
£3.99 per roll or 3 rolls for £10

$P =$ (9 m semicircle) $+$ (5 m semicircle) $+ 2 \times$ 2 m

$P = \frac{1}{2} \times \pi \times 9 + \frac{1}{2} \times \pi \times 5 + 2 \times 2$

$P = 25.99\text{ m}$

25.99

CIRCLE

CIRCUMFERENCE

$C = \pi d \ (= 2\pi r)$

Answer 12

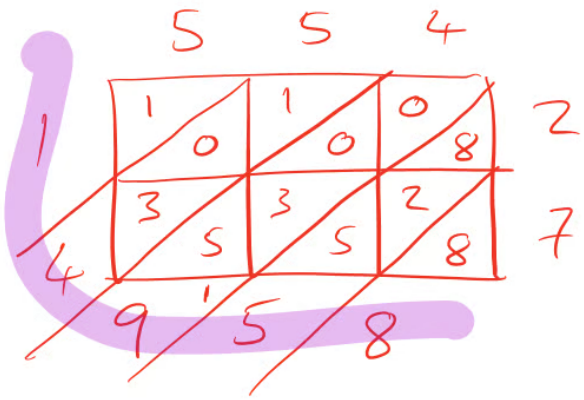
Steve wants to put a hedge along one side of his garden.

He needs to buy 27 plants for the hedge.
Each plant costs £5.54

Steve has £150 to spend on plants for the hedge.

Does Steve have enough money to buy all the plants he needs?

TOTAL = 27×5.54



$27 \times 5.54 = £149.58$

YES, STEVE HAS ENOUGH AS $149.58 < 150$

Answer 13

Each day a company posts some small letters and some large letters.

The company posts all the letters by first class post.

The tables show information about the cost of sending a small letter by first class post and the cost of sending a large letter by first class post.

Small Letter

Weight	First Class Post
0–100 g	~~60p~~ £0.60

Large Letter

Weight	First Class Post
0–100 g	£1.00
101–250 g	£1.50
~~251–500 g~~	~~£1.70~~
~~501–750 g~~	~~£2.50~~

120

56 + 24 = 80

80 − 56 = 24

One day the company wants to post 200 letters.

The ratio of the number of small letters to the number of large letters is 3 : 2

70% of the large letters weigh 0–100 g.

The rest of the large letters weigh 101–250 g.

Work out the total cost of posting the 200 letters by first class post.

S : L TOTAL

3 : 2 ⟷ 5

×40 ↓ 120 : 80 ⟷ 200 ↓ ×40

70% of 80 = $\frac{70}{100} \times 80$ = 56

TOTAL COST = 120 × 0.60 + 56 × 1.00 + 24 × 1.50

= 72 + 56 + 36

= 128 + 36

= 150 + 14

= £164

Answer 14

Saphia is organising a conference.
People at the conference will sit at circular tables.

Diagram **NOT** accurately drawn

Each table has a diameter of 140 cm.
Each person needs 60 cm around the circumference of the table.

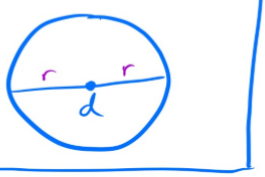
There are 12 of these tables in the conference room.
A total of 90 people will be at the conference.

Are there enough tables in the conference room?

CIRCLE

CIRCUMFERENCE

$C = \pi d \ (= 2\pi r)$



ONE TABLE $C = \pi \times 140$

$\simeq 439\ldots$

NO OF PEOPS $= \frac{439\ldots}{60}$

$= 7.33$

$=$ 7 PEOPS/TABLE.

TWELVE TABLES

NO OF PEOPS $= 7 \times 12$

$=$ 84 PEOPLE

SINCE $84 < 90$ THERE ARE NOT ENOUGH TABLES

Answer 15

Henry is thinking of having a water meter.

These are the two ways he can pay for the water he uses.

Water Meter	No Water Meter
A charge of £28.20 per year **plus** 91.22p for every cubic metre of water used 1 cubic metre = 1000 litres	A charge of £107 per year

£0.9122

Henry uses an average of 180 litres of water each day.

365 DAYS IN A YEAR

Use this information to determine whether or not Henry should have a water meter.

HENRY USES = $\frac{180 \times 365}{1000}$ = $\frac{65700}{1000}$ LITRES/YR

= 65.7 CUBIC METRES/YR

COST OF WATER METER

= 28.20 + 0.9122 × 65.7

= £88.13

HENRY SHOULD HAVE A WATER METER AS £88.13 < £107