OCRl GCSE Mathematics Calculator 2023 Foundation Paper 3 Revision Worksheet

Question 9

On Heidi's bookcase, the ratio of fiction to non-fiction books is 2 : 3. Heidi removes 2 fiction books from the bookcase. The ratio of fiction to non-fiction books is 5 : 8.

How many books are left on the bookcase in total?

Question 10

(a) Show that 95 is not a prime number.

(b) (i) 2000 and 8750 are written below as the product of their prime factors.

$2000 = 2^4 \times 5^3$

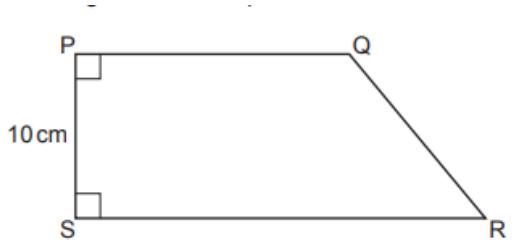
$8750 = 2 \times 5^4 \times 7$

Find the highest common factor (HCF) of 2000 and 8750.

(ii) Write 2×10^{-12} as a product of its prime factors.

Question 11

The diagram shows a quadrilateral, PQRS.



- $PS = 10$ cm.
- $\angle QPS = \angle PSR = 90°$.
- SR is 6 cm longer than PQ.
- The area of quadrilateral $PQRS$ is A cm^2.

Write a simplified expression for the length PQ in terms of A. You must show your working.

Question 12

A box contains 200 matches, correct to the nearest ten matches.

(a) Complete the error interval for n, the number of matches in the box.

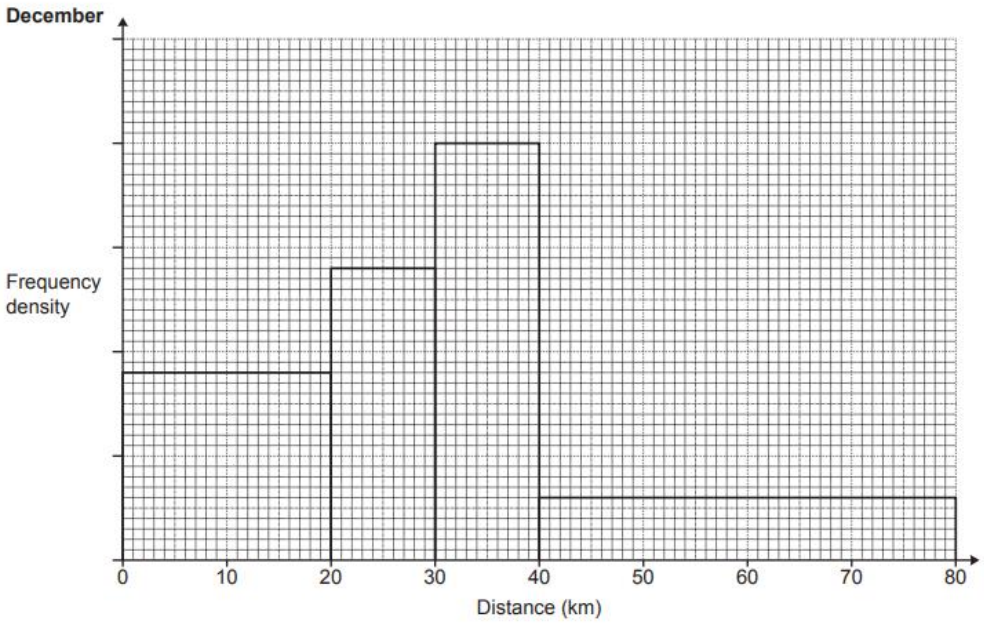
(b) The box is a cuboid with

- length 7 cm, correct to the nearest cm
- width 5 cm, correct to the nearest cm
- volume 248 cm^3, correct to the nearest cm^3

Show that the smallest possible height of the box is 6 cm.

Question 13

A running club records the distances run by each member during December. The results are shown in this histogram



(a) 18 members run less than 20 km.

(i) Work out the number of members who run more than 30 km.

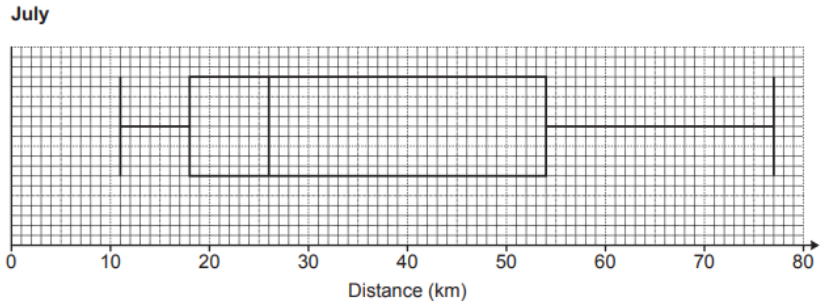
(ii) Finley says:

To estimate the range, I subtracted the smallest possible value from the largest possible value.

So, $80 - 0 = 80$ km.

Explain why Finley's method is likely to overestimate the true value of the range.

(b) This box plot shows the distribution of the distance run by each member of the running club during July.

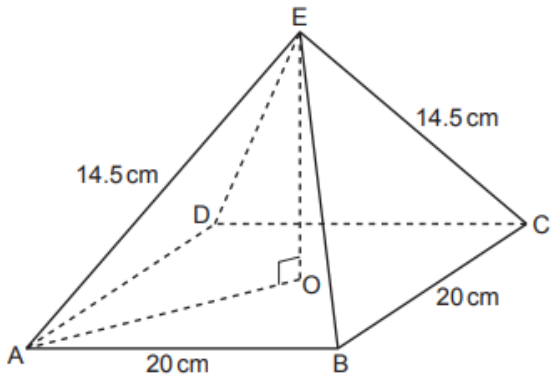


During **December**,
- the median distance run was 30 km
- the interquartile range of the distance run was 20 km.

Make **two** comparisons between the distances run during December and the distances run during July.
Include values to support your comparisons.

Question 14

The diagram shows a square-based pyramid $ABCDE$. O is the centre of the base.



The pyramid has base length 20 cm and each sloping edge has length 14.5 cm.

(a) Draw the plan view of the pyramid on the one-centimetre grid below. Scale: 1 cm represents 4 cm.

(b) Calculate the volume of the pyramid. You must show your working. **[The volume of a pyramid is $\frac{1}{3}$ × area of base × perpendicular height]**

Question 15

Two bottles are mathematically similar.

- The small bottle holds 0.5 litres and has a height of 35 cm.
- The large bottle holds 2 litres.

Calculate the height of the large bottle.

Question 16

The price of a seat on a flight, £P, is given by $P = 49 \times 1.009^n$ where n is the number of seats already sold on this flight.

(a) Write down the percentage increase in price of the second seat sold compared to the first seat sold.

(b) Show that the price of the 40th seat sold is less than £70.