CAMBRIDGE COLLEGE LIMA
IGCSE MATHS

Approximation & Limits of Accuracy
Worksheet 2
Limits of Accuracy

- Upper and lower bounds to solutions of simple problems

Name: _____

Set: _____

Scheme of work

Extended: Question 13, 9, 4, 6 & 11

By the end of this worksheet you should be able to:

a. Obtain appropriate upper and lower bounds to solutions of simple problems for data given to a specified accuracy.

Reference:

13 A square has sides of length d metres.
This length is 120 metres, correct to the nearest 10 metres.

(a) Complete the statement in the answer space.

Answer(a) ..... $\leqslant d <$ ..... [1]

(b) Calculate the difference between the largest and the smallest possible areas of the square.

Answer(b) ..... m^2 [2]

9 Ashraf takes 1500 steps to walk d **metres** from his home to the station.
Each step is 90 centimetres correct to the nearest 10 cm.

Find the lower bound and the upper bound for d.

Answer ..... $\leqslant d <$ ..... [3]

4 Angharad sleeps for 8 hours each night, correct to the nearest 10 minutes.
The total time she sleeps in the month of November (30 nights) is T hours.
Between what limits does T lie?

Answer ..... $\leqslant T <$ ..... [2]

6 In 2005 there were 9 million bicycles in Beijing, correct to the nearest million.
The average distance travelled by each bicycle in one day was 6.5 km correct to one decimal place.
Work out the upper bound for the **total** distance travelled by all the bicycles in one day.

Answer ..... km [2]

11 A rectangular photograph measures 23.3 cm by 19.7 cm, each correct to 1 decimal place.
Calculate the lower bound for

(a) the perimeter,

Answer(a) ..... cm [2]

(b) the area.

Answer(b) ..... cm^2 [1]