

**TB(2A) Ch. 6 Errors in Measurement
Conventional Questions**

1. [16-17 S.2 Mid-year #3]

In 2016, there were 827 graduates in ABC school.

- (a) Round off the number of graduates to the nearest 100. **(1 mark)**
- (b) Find (i) the absolute error and **(1 mark)**
(ii) the percentage error **(1 mark)**
of the approximation in (a).

2. [16-17 S.2 Mid-year #10]

Jim used a ruler to measure the length of a cubic box as 7.5 cm. The scale interval of the ruler is 0.1 cm.

- (a) Find the maximum absolute error of the measurement. **(1 mark)**
- (b) Find the percentage error of the measurement. **(2 marks)**
- (c) Jim lost his ruler and he wanted to measure the dimension of a cardboard. He then used the cubic box to measure the dimensions of the cardboard. The length and width of the cardboard are 6 times and 3 times the length of a side of the cubic box respectively.
- (i) Find the range of possible value of the actual length of the cardboard. **(2 marks)**
- (ii) Write down the minimum area of the cardboard. **(1 mark)**

3. [16-17 S.2 Final Exam, #3]

The length of an AAA battery is measured as 44.5 mm, correct to the nearest 0.1 mm.

- (a) Write down the scale interval of the measuring tool used. **(1 mark)**
- (b) Write down the range of the actual length of an AAA battery. **(1 mark)**
- (c) There is an AAA battery box of x mm tall. Its width is just fit for one AAA battery. It is given that $x \geq 135$. Is it possible to put three AAA batteries in a row inside the box? Explain your answer. **(2 marks)**

4. [17-18 S.2 Mid-year #3]

The actual number of visitors of a fun fair is 2829. Find the percentage error when the number of visitors is correct to the nearest hundred. **(2 marks)**

5. [17-18 S.2 Mid-year #9]

The measured capacity of a bottle is 400 mL, correct to the nearest 10 mL.

- (a) Find the maximum absolute error and the range of the actual capacity of the bottle. **(3 marks)**
- (b) Write down the relative error of the measured capacity of the bottle. **(1 mark)**
- (c) A factory produces 1000 bottles of juice every day. Miss Lam claims that the total capacity of the juice produced must be more than 2780 L for 7 days. Do you agree? Explain your answer. **(2 marks)**

6. [17-18 S.2 Final Exam, #5]

The net weight of a pack of gummy bear is measured as 8 g correct to the nearest g.

- (a) Find the least possible net weight of the pack of gummy bear. **(1 mark)**
(b) Find the percentage error of the measurement. **(2 marks)**

7. [18-19 S.2 Mid-year, #5]

The value of a diamond ring is \$389 480.

- (a) Round off the value to 3 significant figures. **(1 mark)**
(b) Find the percentage error of the estimation made in (a). **(2 marks)**

8. [18-19 S.2 Final Exam, #9]

The measured weight of a biscuit is 2.5 g, correct to the nearest 0.1 g.

- (a) Find the maximum absolute error of the measurement. **(1 mark)**
(b) Find the percentage error of the measurement. **(2 marks)**
(c) It is given that the minimum weight requirement of a box of biscuit is 27 g. Teresa claims that it must be enough to meet the requirement if there are 11 biscuits in the box. Do you agree? Explain your answer. **(2 marks)**

9. [19-20 S.2 Mid-year Exam, #1a, c]

Give answers only. Working need not be shown.

(2 marks)

- (a) Round off 0.080 271 6 to 3 significant figures.
(c) A student measures the length of a metal rod by a ruler. The measured length is 25 cm, correct to the nearest cm. Find the relative error of the measurement.

10. [19-20 S.2 Mid-year Exam, #5]

It is given that the population of a country is 361 390, of which 60% of them are male.

- (a) Estimate the female population of the country by correcting the answer to 3 significant figures. **(2 marks)**
(b) Find the percentage error of the approximation obtained in (a). **(2 marks)**

11. [20-21 S.2 Mid-year Exam, #4]

- (a) Round up 643.567 to 2 significant figures. **(1 mark)**
(b) Round down 240 982 to 3 significant figures. **(1 mark)**
(c) Round off 0.00352888 to 4 significant figures. **(1 mark)**

12. [20-21 S.2 Standardized Test, #7]

A tablet is considered to be *qualified* if its weight is measured as 800 g correct to the nearest g.

- (a) Find the least possible weight of a *qualified* tablet. (2 marks)
- (b) Is it possible that the total weight of 48 *qualified* tablets is measured as 38.3 kg correct to the nearest 0.1 kg? Explain your answer. (3 marks)

13. [20-21 S.2 Final Exam, #5]

- (a) Round off 906.312 to the nearest ten. (1 mark)
- (b) Round up 1.4521 to 2 decimal places. (1 mark)
- (c) Round down 352789 to 3 significant figures. (1 mark)

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