

TB(2A) Ch. 4 Approximation and errors
Multiple Choice Questions**1. [13-14 Mid-year Exam #1]** $0.204678 =$

- A. 0 (correct to the nearest integer).
- B. 0.204 (correct to 3 decimal places).
- C. 0.21 (correct to 2 significant figures).
- D. 0.2047 (correct to 3 significant figures).

2. [13-14 Mid-year Exam #4]

The thickness of a book is 34 mm correct to the nearest mm. Which of the following could be its actual thickness?

- A. 33.3 mm
- B. 33.5 mm
- C. 34.5 mm
- D. 35.0 mm

3. [13-14 Mid-year Exam #18]

In the year 2013, there were 105,432 candidates sitting for the HKDSE examination. If this number is rounded to 2 significant figures, what is the relative error of the approximate value?

- A. 0.041
- B. 0.042
- C. 0.043
- D. 0.044

4. [13-14 Mid-year Exam #19]

The length of a side of a square is measured to be 2.5 cm with a percentage error of 2%. Find the accumulated error of its area.

- A. 0.002 5 cm²
- B. 0.01 cm²
- C. 0.247 5 cm²
- D. 0.252 5 cm²

5. [13-14 S6 Mock Exam #1] $0.7401496 =$

- A. 1 (correct to 1 sig. fig.)
- B. 0.74 (correct to 3 d.p.)
- C. 0.74015 (correct to 5 d.p.)
- D. 0.7401500 (correct to 7 sig. fig.)

6. [13-14 Final Exam #7]

It is given that $a = 0.005\ 490\ 0$, which of the following statements is/are correct?

- I. a has 7 significant figures.
- II. The most significant figure of a is 5.
- III. $a = 0.005\ 500\ 0$, correct to 2 significant figures

- A. II only
- B. III only
- C. I and II only
- D. I and III only

7. [13-14 Final Exam #8]

The temperature of a cup of water is measured to be 10°C by a thermometer with a scale interval of 1°C . What is the range of its actual temperature?

- A. $9^{\circ}\text{C} \leq \text{Actual temperature} < 11^{\circ}\text{C}$
- B. $9.5^{\circ}\text{C} < \text{Actual temperature} \leq 10.5^{\circ}\text{C}$
- C. $9.5^{\circ}\text{C} \leq \text{Actual temperature} < 10.5^{\circ}\text{C}$
- D. $9.5^{\circ}\text{C} \leq \text{Actual temperature} \leq 10.5^{\circ}\text{C}$

8. [13-14 S.6 Mock Exam #1]

$0.7401496 =$

- A. 1 (correct to 1 sig. fig.)
- B. 0.74 (correct to 3 d.p.)
- C. 0.74015 (correct to 5 d.p.)
- D. 0.7401500 (correct to 7 sig. fig.)

9. [14-15 Mid-year Exam #8]

How many significant figures does 0.00987060 have?

- A. 5
- B. 6
- C. 8
- D. 9

10. [14-15 Mid-year Exam #9]

The length of a 1-foot square tile should be 30.48 cm (correct to the nearest 0.01 cm) in order to fulfill the quality control requirement. Find the range of the acceptable length of the square tile.

- A. $30.475 \text{ cm} \leq \text{length} < 30.485 \text{ cm}$
- B. $30.47 \text{ cm} \leq \text{length} < 30.49 \text{ cm}$
- C. $30.465 \text{ cm} \leq \text{length} < 30.495 \text{ cm}$
- D. $30.43 \text{ cm} \leq \text{length} < 30.53 \text{ cm}$

11. [14-15 Mid-year Exam #19]

When a number is rounded off to 3 decimal places, the approximated value has 5 significant figures. This number is possible to be lying between

- A. 3 and 5.
- B. 10 and 100.
- C. 100 and 200.
- D. 300 and 500.

12. [14-15 Mid-year Exam #20]

The Body Mass Index (BMI) is calculated as:

$$\text{BMI} = \frac{\text{Weight (kg)}}{[\text{Height (m)}]^2}$$

Joanne weighs 57 kg (correct to the nearest kg) and her height is 1.63 m (correct to the nearest 0.01 m). Find the range of her possible BMI correct to 3 decimal places.

- A. $21.396 < \text{BMI} < 21.510$
- B. $21.323 < \text{BMI} < 21.586$
- C. $21.265 < \text{BMI} < 21.642$
- D. $21.136 < \text{BMI} < 21.775$

13. [14-15 S.6 Mock Exam #6]

The base and height of a parallelogram are measured as 5 m and 3 m respectively, correct to the nearest m. Let $x \text{ cm}^2$ be the actual area of the parallelogram. Find the range of values of x .

- A. $11.25 < x \leq 19.25$
- B. $11.25 \leq x < 19.25$
- C. $1125 \leq x < 1925$
- D. $112500 \leq x < 192500$

14. [14-15 Final Exam #3]

Which of the following statements are true?

- I. $879.48 = 900$, correct to 1 significant figure.
- II. $879.48 = 880$, correct to the nearest integer.
- III. $879.48 = 879.5$, correct to 1 decimal place.

- A. I and II only
- B. I and III only
- C. II and III only
- D. I, II and III

15. [14-15 Final Exam #15]

In 2014, the population in Hong Kong was about 7,061,000, correct to the nearest hundred. The land area was about 1104 km^2 correct to the nearest km^2 . Find the upper limit of the population density in $\text{people}/\text{km}^2$ correct to 3 decimal places.

- A. $6191.100 \text{ people}/\text{km}^2$
- B. $6191.188 \text{ people}/\text{km}^2$
- C. $6392.983 \text{ people}/\text{km}^2$
- D. $6398.777 \text{ people}/\text{km}^2$

16. [15-16 Mid-year Exam #1]

When 0.003150994 is rounded off to 5 significant figures, it becomes

- A. 0.00315.
- B. 0.0031510.
- C. 0.003151.
- D. 0.0031508.

17. [15-16 Mid-year Exam #2]

The weight of the school bag of Kim is 2.2 kg, correct to the nearest 0.2 kg. Which of the following may be the actual weight of Kim's school bag?

- A. 2.0 kg
- B. 2.1 kg
- C. 2.3 kg
- D. 2.4 kg

18. [15-16 Mid-year Exam #13]

A number is rounded off to give an approximate value 27 030. To give this approximated value, how many significant figures may the number be rounded off to?

- I. 3
- II. 4
- III. 5

- A. II only
- B. III only
- C. I and II only
- D. II and III only

19. [15-16 Mid-year Exam #14]

A car travels 162 km, correct to the nearest 0.5 km, in 3 hours, correct to the nearest 2 minutes. The maximum speed, correct to 3 significant figures, is

- A. 40.6 km/h.
- B. 53.8 km/h.
- C. 54.4 km/h.
- D. 81.1 km/h.

20. [15-16 Final Exam, #15]

The length of a piece of wire is measured as 10 m correct to the nearest m. If the wire is cut into n pieces such that the length of each piece is measured as 20 cm correct to the nearest cm, find the greatest possible value of n .

- A. 50
- B. 51
- C. 53
- D. 54

21. [16-17 Mid Year Exam, #7]

Round off 1.989828 correct to 4 significant figures.

- A. 1.989
- B. 1.990
- C. 1.9898
- D. 1.98980

22. [16-17 Mid Year Exam, #8]

A photo album in a smartphone contains 2000 photos, correct to the nearest 10 photos. Which of the following may NOT be the actual number of photos?

- A. 1995
- B. 1999
- C. 2004
- D. 2005

23. [16-17 Mid Year Exam, #11]

Which of the following numbers have 5 significant figures?

- I. 0.0226
- II. 2.0026
- III. 2.2060

- A. II only
- B. I and III only
- C. II and III only
- D. I, II and III

24. [16-17 Final Exam, #4]

$0.0295872 =$

- A. 0.029 (cor. to 3 d. p.).
- B. 0.03 (cor. to 3 d. p.).
- C. 0.0295 (cor. to 3 sig. fig.).
- D. 0.0296 (cor. to 3 sig. fig.).

25. [17-18 Mid-year Exam #15]

The base and height of a triangle are measured as 5.6 cm and 4.3 cm respectively, correct to the nearest 0.1 cm. Find the upper limit of the actual area of the triangle, correct to 4 significant figures.

- A. 12.04 cm²
- B. 12.29 cm²
- C. 12.54 cm²
- D. 24.58 cm²

26. [17-18 Mid-year Exam #16]

The upper limit and lower limit of the weight of a toy rabbit are 402 g and 398 g respectively. Find the percentage error.

- A. 0.1%
- B. 0.2%
- C. 0.5%
- D. 5%

27. [17-18 Final Exam #6]

If $0.23495 < x < 0.23518$, which of the following must be true?

- A. $x = 0.3$ (correct to 1 significant figure).
- B. $x = 0.24$ (correct to 2 significant figures).
- C. $x = 0.235$ (correct to 3 significant figures).
- D. $x = 0.2350$ (correct to 4 significant figures).

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