

Math 103 Practice Test

Question 1 Find the **place value** of the figure **5** in each of the following:

- (a) 24.53
- (b) 0.458

- A) a is hundredths, b is tenths
- B) a is tenths, b is hundredths
- C) a is hundredths, b is thousandths

Question 2 Change the following fractions to decimals and then add them together.

$$\frac{6}{10} + \frac{4}{100} = ?$$

Which of the following is the correct sum?

- A) 0.64
- B) 0.46
- C) 0.604

Question 3 Find the value of the following:

$$\text{HCF}(60, 80) + \text{LCM}(4, 7)$$

- A) 40
- B) 48
- C) 56

Question 4 How many numbers in the following set are prime numbers?

$$A = \{1, 3, 5, 7, 9, 11, 13, 15, 17, 19\}$$

- A) 6
- B) 7
- C) 8

Question 5 Which one of the following is an **improper fraction**?

- A) $\frac{5}{2}$
- B) $\frac{2}{5}$
- C) $\frac{3}{4}$

Question 6 Which one of the following is a **mixed number**?

- A) $\frac{7}{3}$
- B) $1\frac{1}{2}$
- C) $\frac{3}{5}$

Question 7 Which of the following fractions is **equivalent to** $\frac{2}{3}$?

- A) $\frac{4}{6}$
- B) $\frac{3}{5}$
- C) $\frac{1}{4}$

Question 8 Which fraction is the **smallest** in value?

$$\frac{3}{4}, \quad \frac{2}{3}, \quad \frac{5}{6}$$

- A) $\frac{3}{4}$
- B) $\frac{2}{3}$
- C) $\frac{5}{6}$

Question 9 Find the value of the following expression:

$$\frac{3}{4} + \frac{1}{2} \times \frac{2}{3} - \frac{1}{6} \div \frac{1}{3}$$

- A) $\frac{7}{12}$
- B) 1
- C) $\frac{5}{6}$

Question 10 Convert 0.3125 to a fraction in its lowest terms.

- A) $\frac{5}{16}$
- B) $\frac{5}{80}$
- C) $\frac{5}{125}$

Question 11 The population of a small town is reported as 1200 to the nearest 100.

What is the possible range of the actual population of the town?

- A) 1150 to 1249
- B) 1100 to 1299
- C) 1150 to 1250

Question 12 A box contains a number of marbles. The number of marbles is reported as 5000 to the nearest 1000.

What is the possible range of the actual number of marbles in the box?

- A) 4000 to 5999
- B) 4500 to 5500
- C) 4500 to 5499

Question 13 Round the number 19.6872 to 2 decimal places.

- A) 19.68
- B) 19.69
- C) 19.70

Question 14 Correct 53.685 to 3 significant figures.

- A) 53.6
- B) 53.7
- C) 53.68

Question 15 Evaluate

$$1.75 \times 10^3 + 2.57 \times 10^4$$

and give your answer in standard form.

- A) 2.745×10^4
- B) 27.45×10^3
- C) 2.745×10^3

Question 16 A square has a side length of 8 cm. The sum of the perimeters of the square and an equilateral triangle is 44 cm.

What is the side length of the equilateral triangle?

- A) 12 cm
- B) 6 cm
- C) 4 cm

Question 17 A worker whose salary is 6000 TL receives a salary increment of 15%.

What is his updated salary?

- A) 6900 TL

B) 6600 TL

C) 7000 TL

Question 18 Three friends, Ali, Ayşe, and Mehmet, share a total of 1200 TL in the ratio 3 : 4 : 5.

How much money does Ayşe receive?

- A) 360 TL
- B) 400 TL
- C) 480 TL

Question 19 A group of 12 workers can complete a task in 20 days. How many days would it take 15 workers to complete the same task, assuming all work at the same rate?

- A) 16 days
- B) 18 days
- C) 22 days

Question 20 A triangle has a base of 20 cm and an area of 150 cm^2 . What is the height of the triangle?

- A) 10 cm
- B) 15 cm
- C) 12 cm

Question 21 A trapezium has parallel sides of lengths 12 cm and 18 cm and an area of 150 cm^2 . What is its height?

- A) 5 cm
- B) 6 cm
- C) 10 cm

Question 22 A cylinder has a radius of 7 cm and a height of 10 cm. Take $\pi = 3$.

1. Find the curved surface area (CSA). 2. Find the total surface area (TSA).

- A) $\text{CSA} = 420 \text{ cm}^2$, $\text{TSA} = 714 \text{ cm}^2$
- B) $\text{CSA} = 440 \text{ cm}^2$, $\text{TSA} = 648 \text{ cm}^2$
- C) $\text{CSA} = 400 \text{ cm}^2$, $\text{TSA} = 700 \text{ cm}^2$

Question 23 A sphere has a radius of 7 cm. Take $\pi = 3$.

Find the volume of the sphere.

- A) 686 cm^3
- B) 1029 cm^3
- C) 1372 cm^3

Question 24 Simplify the following expression:

$$\frac{xy^3}{x^2y} \div \frac{x^2}{xy}$$

- A) $\frac{y^3}{x^2}$
- B) y^3
- C) $\frac{y^4}{x^2}$

Question 25 A shop sells pens and pencils. A total of 50 items are sold. Pens cost 12p each and pencils cost 15p each.

If the total cost of all items is £6.60, how many pens and pencils were sold?

- A) 30 pens and 20 pencils
- B) 25 pens and 25 pencils
- C) 20 pens and 30 pencils

Question 26 Simplify the following expression using the laws of exponents:

$$\left(\frac{a^5 \cdot a^3}{a^4} \right)^2$$

- A) a^{16}
- B) a^8
- C) a^6

Question 27 Convert the following numbers:

1. Convert the binary number 1011_2 to denary.

- A) 11
- B) 13
- C) 9

2. Convert the denary number 14 to binary.

- A) 1100_2
- B) 1110_2
- C) 1011_2

3. Convert the binary number 1101_2 to denary.

- A) 11
- B) 13
- C) 15

4. Convert the denary number 9 to binary.

- A) 1001_2
- B) 1010_2
- C) 1100_2

Question 28

1. Convert the denary number 65_{10} to octal.

- A) 101_8
- B) 11_8
- C) 121_8

2. Convert the octal number 74_8 to denary.

- A) 60
- B) 62
- C) 64
- D) 60

Question 29

1. Convert the denary number 255_{10} to hexadecimal.

- A) FE_{16}
- B) $F0_{16}$
- C) FF_{16}

2. Convert the hexadecimal number $1A_{16}$ to denary.

- A) 24
- B) 28
- C) 26

Question 30

1. Convert the denary number 15.875_{10} to binary.

- A) 1111.111_2
- B) 1111.011_2
- C) 1111.101_2

2. Convert the binary number 1010.101_2 to denary.

- A) 10.625
- B) 10.75
- C) 10.5

Question 31 Add the following binary numbers:

$$1011_2 + 1101_2$$

- A) 10100_2
- B) 10110_2
- C) 11000_2

Question 32 Subtract the following binary numbers:

$$11010_2 - 1011_2$$

- A) 1111_2
- B) 10001_2
- C) 10101_2

Question 33 Multiply the following binary numbers:

$$101_2 \times 11_2$$

- A) 1111_2
- B) 111_2
- C) 1001_2

Question 34 Divide the following binary numbers:

$$1100_2 \div 10_2$$

- A) 110_2
- B) 100_2
- C) 101_2

Question 35 Convert the octal number 125_8 to denary.

- A) 85
- B) 93
- C) 101

Question 36 Convert the octal number 77_8 to denary.

- A) 63
- B) 59
- C) 65

Question 37 Convert the hexadecimal number $2F_{16}$ to denary.

- A) 47
- B) 46
- C) 50