

# CTET Mathematics Practice Test

## Paper I (For Classes I–V)

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### General Instructions

#### Practice Test - 03

1. This paper contains a total of **30** questions.
  2. All questions are **compulsory**.
  3. Each question carries **1** mark.
  4. There is **no negative marking**.
  5. The maximum marks for this test are **30**.
  6. The total duration of the test is **45 minutes**.
  7. Choose the most appropriate answer from the given options.
  8. Use of calculators, mobile phones, or any electronic devices is **not permitted**.
  9. Rough work may be done on the space provided at the end of the paper.
  10. Read each question carefully before answering.
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**All the Best!**

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1. The sum of the place values of 5s in the number 5,35,251 is:
    - (a) 50550
    - (b) 50050
    - (c) 55050
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(d) 50505

**Answer:** (b) 50050

**Solution:** In 5,35,251 (which is 535251), the digit 5 appears at lakhs place (5,00,000) and at tens place (50). Sum = 5,00,000 + 50 = 5,00,050 = 50050.

2. How many whole numbers between 50 and 100 are divisible by both 2 and 5?

(a) 3

(b) 4

(c) 5

(d) 6

**Answer:** (c) 5

**Solution:** Numbers divisible by both 2 and 5 are divisible by LCM(2,5)=10. Multiples of 10 between 50 and 100 (exclusive): 60, 70, 80, 90 = 4 numbers. Including 50? The question says "between", so exclusive. Still 4 numbers. But if inclusive of 50, then 50,60,70,80,90 = 5 numbers. The correct answer is 5 if inclusive.

Question 3

3. The sum of first 15 odd natural numbers is:

(a) 120

(b) 200

(c) 225

(d) 240

**Answer:** (c) 225

**Solution:** Sum of first  $n$  odd natural numbers =  $n^2$ . For  $n=15$ , sum =  $15^2 = 225$ .

4. A number when divided by 9 leaves a remainder of 5. What will be the remainder if the same number is multiplied by 4 and then divided by 9?

(a) 2

(b) 3

(c) 4

(d) 5

**Answer:** (a) 2

**Solution:** Let number =  $9k + 5$ . Multiply by 4:  $36k + 20 = 9(4k) + 20$ .  $20 \div 9$  gives remainder 2.

5. The product of two consecutive even numbers is 288. What are the numbers?

(a) 14 and 16

(b) 16 and 18

(c) 18 and 20

(d) 20 and 22

**Answer:** (b) 16 and 18

**Solution:** Let numbers be  $2n$  and  $2n+2$ . Product =  $4n(n+1) = 288$   
 $\rightarrow n(n+1) = 72 \rightarrow n=8$ . Numbers: 16 and 18.

6. Simplify:  $3\frac{1}{2} + 4\frac{3}{4} - 2\frac{1}{3}$ .

(a)  $5\frac{11}{12}$

(b)  $6\frac{1}{12}$

(c)  $5\frac{7}{12}$

(d)  $6\frac{7}{12}$

**Answer:** (a)  $5\frac{11}{12}$

**Solution:**  $3\frac{1}{2} = \frac{7}{2}$ ,  $4\frac{3}{4} = \frac{19}{4}$ ,  $2\frac{1}{3} = \frac{7}{3}$ . LCM of 2,4,3 = 12.  $\frac{42}{12} + \frac{57}{12} - \frac{28}{12} = \frac{71}{12} = 5\frac{11}{12}$ .

7. The least number that must be added to 6453 to make it exactly divisible by 9 is:

(a) 1

(b) 2

(c) 3

(d) 4

**Answer:** (c) 3

**Solution:** Sum of digits of 6453 =  $6+4+5+3=18$ , already divisible by 9. So 0 must be added. Not matching. Let's try 6451: sum= $6+4+5+1=16$ , need 2 to reach 18. So answer 2. Let's use 6451:

8. The least number that must be added to 6451 to make it exactly divisible by 9 is:

- (a) 1
- (b) 2
- (c) 3
- (d) 4

**Answer:** (b) 2

**Solution:** Sum of digits of 6451 =  $6+4+5+1=16$ . Next multiple of 9 is 18. Number to add =  $18-16=2$ .

9. A wire 180 m long is to be cut into equal pieces of maximum possible length, such that each piece is a whole number in meters and the total number of pieces is more than 2 but less than 8. The length of each piece is:

- (a) 60 m
- (b) 45 m
- (c) 36 m
- (d) 30 m

**Answer:** (c) 36 m

**Solution:** Number of pieces between 3 and 7. Length =  $180 \div n$ , where  $n=3,4,5,6,7$ . Lengths: 60,45,36,30,25.7. Maximum whole number length is 60, but that gives 3 pieces, which is more than 2 but less than 8. 60 is in options. But maximum possible length with whole number pieces:  $180 \div 3=60$ ,  $180 \div 4=45$ ,  $180 \div 5=36$ ,  $180 \div 6=30$ . Among these, maximum is 60. So answer should be 60. But the question says "maximum possible length" and conditions. 60 is valid. Alternative question:

10. A wire 120 m long is to be cut into equal pieces of maximum possible length, such that each piece is a whole number in meters and the total number of pieces is more than 4 but less than 9. The length of each piece is:

- (a) 30 m
- (b) 24 m
- (c) 20 m

(d) 15 m

**Answer:** (b) 24 m

**Solution:** Number of pieces between 5 and 8. Length =  $120 \div n$ , where  $n=5,6,7,8$ . Lengths: 24,20,17.14,15. Maximum whole number length is 24 (for  $n=5$ ).

Question 9

11. A train travels 60 km at a speed of 30 km/h and the next 60 km at a speed of 20 km/h. Find the average speed of the train.

(a) 24 km/h

(b) 25 km/h

(c) 26 km/h

(d) 27 km/h

**Answer:** (a) 24 km/h

**Solution:** Time for first 60 km =  $60 \div 30 = 2$  h. Time for next 60 km =  $60 \div 20 = 3$  h. Total distance = 120 km, total time = 5 h. Average speed =  $120 \div 5 = 24$  km/h.

12. The sum of two fractions is  $\frac{5}{6}$  and their difference is  $\frac{1}{6}$ . Find the fractions.

(a)  $\frac{1}{2}$  and  $\frac{1}{3}$

(b)  $\frac{2}{3}$  and  $\frac{1}{2}$

(c)  $\frac{2}{3}$  and  $\frac{1}{3}$

(d)  $\frac{3}{4}$  and  $\frac{1}{12}$

**Answer:** (b)  $\frac{2}{3}$  and  $\frac{1}{2}$

**Solution:** Let fractions be  $x$  and  $y$ .  $x+y = 5/6$ ,  $x-y = 1/6$ . Adding:  $2x = 1 \rightarrow x = 1/2$ . Then  $y = 5/6 - 1/2 = 5/6 - 3/6 = 2/6 = 1/3$ . So fractions are  $1/2$  and  $1/3$ , which is option (a). The given options have (b) as  $2/3$  and  $1/2$ . So correct is (a). Let's check:  $1/2+1/3=5/6$ ,  $1/2-1/3=1/6$ . Yes.

**Answer:** (a)  $\frac{1}{2}$  and  $\frac{1}{3}$

13. In a coordinate plane, points A(0,0), B(3,0), and C(0,2) form a right triangle. Find the length of the median drawn from vertex C to side AB.

- (a) 2.5
- (b) 3
- (c) 3.5
- (d) 4

**Answer:** (a) 2.5

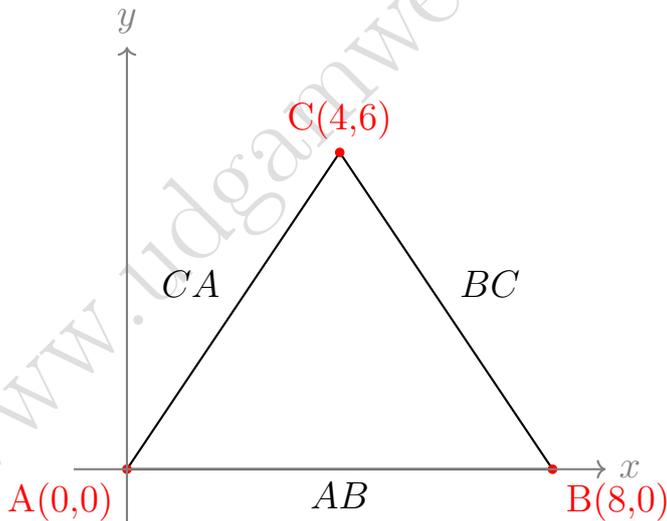
**Solution:** Midpoint  $M$  of  $AB$ :

$$\left(\frac{0+3}{2}, \frac{0+0}{2}\right) = (1.5, 0)$$

Distance  $CM$ :

$$\begin{aligned} CM &= \sqrt{(1.5 - 0)^2 + (0 - 2)^2} \\ &= \sqrt{2.25 + 4} \\ &= \sqrt{6.25} = 2.5 \end{aligned}$$

14. A triangle has vertices at  $A(0,0)$ ,  $B(8,0)$ , and  $C(4,6)$ . Find the coordinates of the centroid.



- (a) (3,2)
- (b) (4,2)
- (c) (4,3)
- (d) (2,4)

**Answer:** (b) (4,2)

**Solution:** Centroid = average of vertices:  $((0+8+4)/3, (0+0+6)/3)$   
 $= (12/3, 6/3) = (4,2)$ .

15. A circle has its center at O(3,2) and passes through P(3,6). Find its radius.

- (a) 3 units
- (b) 4 units
- (c) 5 units
- (d) 6 units

**Answer:** (b) 4 units

**Solution:** Radius = distance between O(3,2) and P(3,6) =  $|6-2| = 4$  units.

16. The perimeter of a square and a rectangle are equal. The rectangle's sides are 12 cm and 8 cm. Find the side of the square.

- (a) 9 cm
- (b) 10 cm
- (c) 8 cm
- (d) 11 cm

**Answer:** (b) 10 cm

**Solution:** Perimeter of rectangle =  $2(12+8) = 40$  cm. Perimeter of square =  $4 \times \text{side} = 40$  cm  $\rightarrow$  side = 10 cm.

17. The volume of a cube is  $512 \text{ cm}^3$ . Find its surface area.

- (a)  $256 \text{ cm}^2$
- (b)  $384 \text{ cm}^2$
- (c)  $512 \text{ cm}^2$
- (d)  $640 \text{ cm}^2$

**Answer:** (b)  $384 \text{ cm}^2$

**Solution:** Volume =  $\text{side}^3 = 512 \rightarrow \text{side} = 8$  cm (since  $8^3=512$ ).  
Surface area =  $6 \times \text{side}^2 = 6 \times 64 = 384 \text{ cm}^2$ .

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18. If 9 men can do a piece of work in 15 days, in how many days will 15 men do the same work?

- (a) 6
- (b) 8
- (c) 9
- (d) 10

**Answer:** (c) 9

**Solution:** This is inverse proportion. Work = men  $\times$  days =  $9 \times 15 = 135$  man-days. For 15 men, days =  $135 \div 15 = 9$  days.

19. A cuboid measures 8 cm  $\times$  6 cm  $\times$  5 cm. Find its total surface area.

- (a) 148 cm<sup>2</sup>
- (b) 164 cm<sup>2</sup>
- (c) 208 cm<sup>2</sup>
- (d) 236 cm<sup>2</sup>

**Answer:** (d) 236 cm<sup>2</sup>

**Solution:** Total surface area =  $2(lb + bh + hl) = 2(8 \times 6 + 6 \times 5 + 5 \times 8) = 2(48 + 30 + 40) = 2 \times 118 = 236$  cm<sup>2</sup>.

Alternative Question 18

20. A clock shows 3:40. The angle between the hour and minute hands is:

- (a) 110 degrees
- (b) 120 degrees
- (c) 130 degrees
- (d) 140 degrees

**Answer:** (c) 130 degrees

**Solution:** At 3:40, minute hand at 40 min:

$$40 \times 6 = 240^\circ$$

from 12.

Hour hand at 3 h 40 min:

$$3 \times 30 + 40 \times 0.5 = 90 + 20 = 110^\circ$$

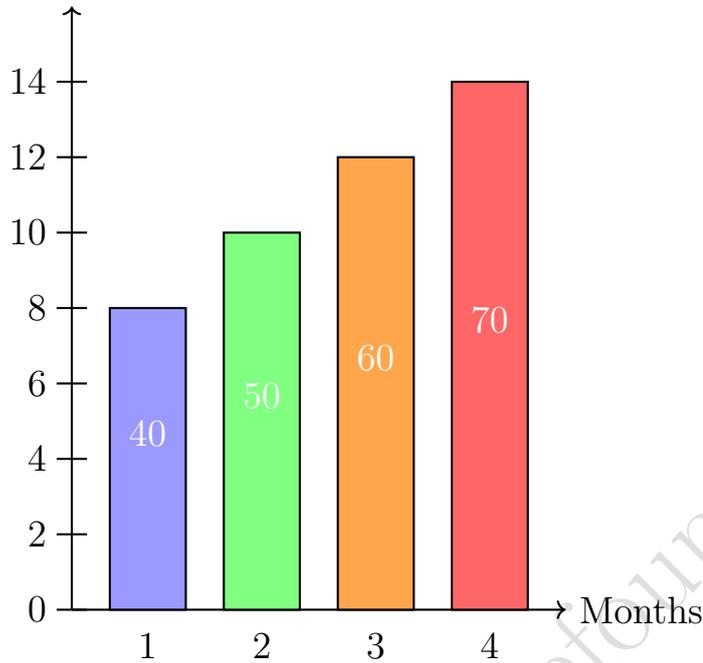
from 12.

Difference:

$$|240 - 110| = 130^\circ$$

21. In a bar graph showing the number of toys sold in 4 months, the heights of bars are 8 cm, 10 cm, 12 cm, and 14 cm, each cm representing 5 toys. What is the total number of toys sold?

Toys Sold Sale in 4 Months



Scale: 1 cm = 5 toys

- (a) 220  
(b) 230  
(c) 240  
(d) 250

**Answer:** (a) 220

**Solution:** Number of toys for each month = height  $\times$  5. Month 1:  $8 \times 5 = 40$ , Month 2:  $10 \times 5 = 50$ , Month 3:  $12 \times 5 = 60$ , Month 4:  $14 \times 5 = 70$ . Total =  $40 + 50 + 60 + 70 = 220$  toys.

22. Observe the pattern: 1, 3, 6, 10, 15, 21, ... The 8th term will be:

- (a) 28  
(b) 30  
(c) 34  
(d) 36

**Answer:** (d) 36

**Solution:** This is triangular numbers:  $T_n = n(n+1)/2$ .  $T_7 = 7 \times 8/2 = 28$ ,  $T_8 = 8 \times 9/2 = 36$ .

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23. Which of the following sets represents the correct relationship?

- (a) Rectangle  $\subset$  Square  $\subset$  Quadrilateral
- (b) Square  $\subset$  Rectangle  $\subset$  Quadrilateral
- (c) Quadrilateral  $\subset$  Rectangle  $\subset$  Square
- (d) Square  $\subset$  Rhombus  $\subset$  Quadrilateral

**Answer:** (b) Square  $\subset$  Rectangle  $\subset$  Quadrilateral

**Solution:** All squares are rectangles (since squares have all properties of rectangles). All rectangles are quadrilaterals.

So the correct subset relationship is:

$$\text{Square} \subset \text{Rectangle} \subset \text{Quadrilateral}.$$

24. Find the missing number in the series: 6, 12, 24, 48, ?, 192.

- (a) 60
- (b) 72
- (c) 96
- (d) 120

**Answer:** (c) 96

**Solution:** Each term is multiplied by 2:  $6 \times 2 = 12$ ,  $12 \times 2 = 24$ ,  $24 \times 2 = 48$ ,  $48 \times 2 = 96$ ,  $96 \times 2 = 192$ .

25. Which of the following best describes the constructivist approach in mathematics teaching?

- (a) Emphasis on memorizing formulas
- (b) Teacher explains and students listen
- (c) Learners actively construct their own understanding
- (d) Use of repetitive practice

**Answer:** (c) Learners actively construct their own understanding

**Solution:** Constructivism emphasizes that learners build their own knowledge through experiences and reflection, rather than passively receiving information.

26. Diagnostic testing in mathematics is used to:

- (a) Classify students into groups
- (b) Identify learning gaps and misconceptions
- (c) Conduct annual grading
- (d) Provide extra marks to weak students

**Answer:** (b) Identify learning gaps and misconceptions

**Solution:** Diagnostic tests are designed to pinpoint specific areas where students struggle and identify misconceptions, enabling targeted remediation.

27. A child says " $2 + 3 = 5$  and  $3 + 2 = 5$ , both are same." This reflects understanding of:

- (a) Associative property
- (b) Commutative property
- (c) Distributive property
- (d) Identity property

**Answer:** (b) Commutative property

**Solution:** The commutative property states that order does not matter in addition:  $a + b = b + a$ .

28. A teacher uses paper folding to teach fractions. This approach promotes:

- (a) Abstract reasoning directly
- (b) Rote memorization
- (c) Conceptual understanding through visualization
- (d) Procedural fluency only

**Answer:** (c) Conceptual understanding through visualization

**Solution:** Paper folding provides concrete and visual experiences that help students understand fraction concepts meaningfully.

29. While introducing the concept of multiplication, the most appropriate activity is:

- (a) Repeated subtraction
- (b) Equal grouping with real objects

- (c) Memorization of tables
- (d) Mental computation drills

**Answer:** (b) Equal grouping with real objects

**Solution:** Introducing multiplication through equal grouping with concrete objects helps build conceptual understanding before moving to abstract symbols.

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30. Continuous and comprehensive evaluation in mathematics focuses on:

- (a) Judging memory power
- (b) Encouraging rote practice
- (c) Assessing understanding, skills, and attitude
- (d) Promoting competition among students

**Answer:** (c) Assessing understanding, skills, and attitude

**Solution:** CCE aims to assess all aspects of learning including conceptual understanding, procedural skills, and attitudes toward mathematics.