

Real Numbers and their Properties

MCQ Test, Set 02

Time: 30 minutes

Maximum marks: 25

Name: _____ Class: _____ Date: _____

- There are 25 questions. Each has exactly one correct answer: choose A, B, C or D.
- Each correct answer carries 1 mark. There is no negative marking.
- The key sheet and worked solutions are at the end of this test.

- The $\frac{p}{q}$ form of -29 is
 A. $\frac{1}{-29}$ B. $\frac{-29}{0}$ C. $\frac{29}{1}$ D. $\frac{-29}{1}$
- How many integers are there between -2 and 4 ?
 A. 4 B. 5 C. 6 D. 7
- Which of the following is a rational number?
 A. $\sqrt{25}$ B. $\sqrt{75}$ C. e D. $\sqrt{19}$
- $\sqrt{33} = 5.7445 \dots$ is
 A. an integer
 B. a non terminating recurring decimal, so rational
 C. a terminating decimal, so rational
 D. a non terminating non recurring decimal, so irrational
- $\sqrt{35}$ belongs to which of these sets?
 A. Z (integers) B. Q (rational numbers)
 C. Q^* (irrational numbers) D. N (natural numbers)
- $-\sqrt{25}$ belongs to which of these sets?
 A. N (natural numbers) B. W (whole numbers)
 C. Q (rational numbers) D. Q^* (irrational numbers)
- Add $4\sqrt{10}$ and $-14\sqrt{10}$.
 A. $-10\sqrt{10}$ B. $18\sqrt{10}$ C. $-56\sqrt{10}$ D. $-18\sqrt{10}$
- Add $11\sqrt{13} - 6\sqrt{15}$ and $\sqrt{13} + 5\sqrt{15}$.
 A. $12\sqrt{13} - \sqrt{15}$ B. $12\sqrt{13} - 11\sqrt{15}$
 C. $12\sqrt{13} + \sqrt{15}$ D. $10\sqrt{13} - \sqrt{15}$
- Subtract $(-6 - 10\sqrt{22})$ from $(-6 + 10\sqrt{22})$.
 A. $-20\sqrt{22}$ B. $20\sqrt{22}$ C. 0 D. -12

10.	Subtract $-4\sqrt{2}$ from $9\sqrt{2}$.			
	A. $-13\sqrt{2}$	B. $-5\sqrt{2}$	C. $5\sqrt{2}$	D. $13\sqrt{2}$
11.	$12\sqrt{3} \times (-7\sqrt{3}) =$			
	A. $-84\sqrt{3}$	B. 252	C. -252	D. 15
12.	$8\sqrt{23} \times 3\sqrt{3} =$			
	A. $24\sqrt{26}$	B. $11\sqrt{69}$	C. $-24\sqrt{69}$	D. $24\sqrt{69}$
13.	$3\sqrt{6} + 11\sqrt{6} - 25\sqrt{6} =$			
	A. $-10\sqrt{6}$	B. $-11\sqrt{6}$	C. $-39\sqrt{6}$	D. $11\sqrt{6}$
14.	$-4549\sqrt{2} + 6973\sqrt{2} + 5130\sqrt{2} - 17050\sqrt{2} =$			
	A. $-19496\sqrt{2}$	B. $9496\sqrt{2}$	C. $-9496\sqrt{2}$	D. $-33702\sqrt{2}$
15.	$-6\sqrt{28} \times 2\sqrt{112} =$			
	A. -37632	B. -672	C. -224	D. 672
16.	$7\sqrt{28} \times (-3\sqrt{7}) =$			
	A. -4116	B. 56	C. -294	D. 294
17.	$\frac{\sqrt{200}}{5\sqrt{2}} =$			
	A. 5	B. 20	C. 10	D. 2
18.	$\frac{4 \times \sqrt{25}}{\sqrt{5}} =$			
	A. 20	B. $\sqrt{25}$	C. $\sqrt{5}$	D. $4\sqrt{5}$
19.	$\sqrt{243}$ in the simplest form is			
	A. $81\sqrt{3}$	B. 27	C. $9\sqrt{3}$	D. $9\sqrt{27}$
20.	$\sqrt{486} =$			
	A. $9\sqrt{6}$	B. $81\sqrt{6}$	C. $9\sqrt{54}$	D. 54
21.	If $a = 6\sqrt{7}$ and $b = 7\sqrt{7}$, then $a + b$ is			
	A. $13\sqrt{7}$	B. $13\sqrt{14}$	C. $-\sqrt{7}$	D. 13
22.	If $62 - 12 = 50$, then $12 - 62 =$			
	A. -74	B. -50	C. 50	D. 74
23.	For $a = -36$, $b = 12$ and $c = 6$, which of the following is true?			
	A. $a + (b + c) = (a + b) + c$		B. $a - b = b - a$	
	C. $(a \div b) \div c = a \div (b \div c)$		D. $a - (b - c) = (a - b) - c$	
24.	In $8 + 0 = 0 + 8 = 8$, 0 is called the			
	A. additive inverse		B. additive identity	
	C. multiplicative inverse		D. multiplicative identity	

25. The additive inverse of 7 is

A. $-\frac{1}{7}$

B. 0

C. -7

D. $\frac{1}{7}$

Key sheet

1. D	2. B	3. A	4. D	5. C
6. C	7. A	8. A	9. B	10. D
11. C	12. D	13. B	14. C	15. B
16. C	17. D	18. D	19. C	20. A
21. A	22. B	23. A	24. B	25. C

Solutions

1. The $\frac{p}{q}$ form of -29 is

Every integer can be written with $q = 1$ ($q \neq 0$).

$$-29 = \frac{-29}{1}$$

Ans: (D) $\frac{-29}{1}$

2. How many integers are there between -2 and 4 ?

$$\mathbb{Z} = \{\dots, -2, -1, 0, 1, 2, 3, \dots\}$$

The integers between -2 and 4 are $-1, 0, 1, 2, 3$, that is 5 numbers.

Ans: (B) 5

3. Which of the following is a rational number?

$$\sqrt{25} = 5 = \frac{5}{1}, \text{ so it is rational.}$$

The other numbers are non terminating non recurring decimals, so they are irrational.

Ans: (A) $\sqrt{25}$

4. $\sqrt{33} = 5.7445\dots$ is

$\sqrt{33} = 5.7445\dots$ is a non terminating non recurring decimal, so it is irrational.

Ans: (D) a non terminating non recurring decimal, so irrational

5. $\sqrt{35}$ belongs to which of these sets?

$\sqrt{35} = 5.9160\dots$ is a non terminating non recurring decimal, so it is irrational.

So $\sqrt{35}$ belongs to Q^* ; it does not belong to N , Q or Z .

Ans: (C) Q^* (irrational numbers)

6. $-\sqrt{25}$ belongs to which of these sets?

$$-\sqrt{25} = -5$$

So $-\sqrt{25}$ belongs to Q ; it does not belong to W , N or Q^* .

Ans: (C) Q (rational numbers)

7. Add $4\sqrt{10}$ and $-14\sqrt{10}$.

$$\begin{aligned} 4\sqrt{10} - 14\sqrt{10} &= (4 - 14)\sqrt{10} \\ &= -10\sqrt{10} \end{aligned}$$

Ans: (A) $-10\sqrt{10}$

8. Add $11\sqrt{13} - 6\sqrt{15}$ and $\sqrt{13} + 5\sqrt{15}$.

$$\begin{aligned} 11\sqrt{13} - 6\sqrt{15} + \sqrt{13} + 5\sqrt{15} &= (11 + 1)\sqrt{13} + (-6 + 5)\sqrt{15} \\ &= 12\sqrt{13} - \sqrt{15} \end{aligned}$$

Ans: (A) $12\sqrt{13} - \sqrt{15}$

9. Subtract $(-6 - 10\sqrt{22})$ from $(-6 + 10\sqrt{22})$.

$$\begin{aligned} (-6 + 10\sqrt{22}) - (-6 - 10\sqrt{22}) &= -6 + 10\sqrt{22} + 6 + 10\sqrt{22} \\ &= 20\sqrt{22} \end{aligned}$$

Ans: (B) $20\sqrt{22}$

10. Subtract $-4\sqrt{2}$ from $9\sqrt{2}$.

$$\begin{aligned} 9\sqrt{2} - (-4\sqrt{2}) &= 9\sqrt{2} + 4\sqrt{2} \\ &= 13\sqrt{2} \end{aligned}$$

Ans: (D) $13\sqrt{2}$

11. $12\sqrt{3} \times (-7\sqrt{3}) =$

$$\begin{aligned} 12\sqrt{3} \times (-7\sqrt{3}) &= 12 \times (-7) \times \sqrt{3} \times \sqrt{3} \\ &= -84 \times 3 = -252 \text{ (since } \sqrt{a} \times \sqrt{a} = a) \end{aligned}$$

Ans: (C) -252

12. $8\sqrt{23} \times 3\sqrt{3} =$

$$\begin{aligned} 8\sqrt{23} \times 3\sqrt{3} &= 8 \times 3 \times \sqrt{23 \times 3} \\ &= 24\sqrt{69} \end{aligned}$$

Ans: (D) $24\sqrt{69}$

13. $3\sqrt{6} + 11\sqrt{6} - 25\sqrt{6} =$

$$\begin{aligned} 3\sqrt{6} + 11\sqrt{6} - 25\sqrt{6} &= (3 + 11 - 25)\sqrt{6} \\ &= -11\sqrt{6} \end{aligned}$$

Ans: (B) $-11\sqrt{6}$

14. $-4549\sqrt{2} + 6973\sqrt{2} + 5130\sqrt{2} - 17050\sqrt{2} =$

$$\text{Positive terms: } 6973\sqrt{2} + 5130\sqrt{2} = 12103\sqrt{2}$$

$$\text{Negative terms: } 4549\sqrt{2} + 17050\sqrt{2} = 21599\sqrt{2}$$

$$\begin{aligned} -4549\sqrt{2} + 6973\sqrt{2} + 5130\sqrt{2} - 17050\sqrt{2} &= 12103\sqrt{2} - 21599\sqrt{2} \\ &= -(21599 - 12103)\sqrt{2} = -9496\sqrt{2} \end{aligned}$$

Ans: (C) $-9496\sqrt{2}$

15. $-6\sqrt{28} \times 2\sqrt{112} =$

$$\begin{aligned} -6\sqrt{28} \times 2\sqrt{112} &= -6 \times 2 \times \sqrt{28 \times 112} \\ &= -12 \times \sqrt{3136} \end{aligned}$$

$$\begin{aligned} \text{Long division: } 5 \times 5 &= 25, \text{ remainder } 6; \text{ bring down } 36 \text{ to get } 636; 106 \times 6 = 636. \text{ So } \sqrt{3136} = 56 \\ &= -12 \times 56 = -672 \end{aligned}$$

Ans: (B) -672

16. $7\sqrt{28} \times (-3\sqrt{7}) =$

$$\begin{aligned} 7\sqrt{28} \times (-3\sqrt{7}) &= 7 \times (-3) \times \sqrt{28 \times 7} \\ &= -21 \times \sqrt{196} \\ \sqrt{196} &= 14 \\ &= -21 \times 14 = -294 \end{aligned}$$

Ans: (C) -294

17. $\frac{\sqrt{200}}{5\sqrt{2}} =$

$$\begin{aligned} \sqrt{200} &= \sqrt{100 \times 2} = 10\sqrt{2} \\ \frac{10\sqrt{2}}{5\sqrt{2}} &= 2 \end{aligned}$$

Ans: (D) 2

18. $\frac{4 \times \sqrt{25}}{\sqrt{5}} =$

$$\begin{aligned} \frac{\sqrt{25}}{\sqrt{5}} &= \sqrt{\frac{25}{5}} = \sqrt{5} \\ \therefore 4 \times \sqrt{5} &= 4\sqrt{5} \end{aligned}$$

Ans: (D) $4\sqrt{5}$

19. $\sqrt{243}$ in the simplest form is

$$\sqrt{243} = \sqrt{81 \times 3} = \sqrt{81} \times \sqrt{3} = 9\sqrt{3}$$

Ans: (C) $9\sqrt{3}$

20. $\sqrt{486} =$

$$\sqrt{486} = \sqrt{81 \times 6} = \sqrt{81} \times \sqrt{6} = 9\sqrt{6}$$

Ans: (A) $9\sqrt{6}$

21. If $a = 6\sqrt{7}$ and $b = 7\sqrt{7}$, then $a + b$ is

$$a + b = 13\sqrt{7} \in R$$

Ans: (A) $13\sqrt{7}$

22. If $62 - 12 = 50$, then $12 - 62 =$

$$12 - 62 = -(62 - 12) = -50$$

Subtraction is not commutative: $50 \neq -50$.

Ans: (B) -50

23. For $a = -36$, $b = 12$ and $c = 6$, which of the following is true?

$$-36 + (12 + 6) = -18 = (-36 + 12) + 6$$

Real numbers are associative under addition and multiplication only.

Ans: (A) $a + (b + c) = (a + b) + c$

24. In $8 + 0 = 0 + 8 = 8$, 0 is called the

Adding 0 or multiplying by 1 leaves the number unchanged: these are the identities.

Ans: (B) additive identity

25. The additive inverse of 7 is

Additive inverse of a is $-a$, since $a + (-a) = 0$.

$$7 + (-7) = 0$$

Ans: (C) -7
