Class 6
Mental Mathematics
Exercise – 1

EXERCISE – 1 : Mental Mathematics (Class 6)
Full solutions

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1. Smallest and largest 5-digit numbers with 7 in tens place (no digit repeated)

Tens place must be 7: _ _ 7 _

Smallest 5-digit number

- Ten-thousands place must be the smallest non-zero digit → 1
- Thousands and ones places must be the next smallest unused digits → 0 and 2

Number: **10273**

Largest 5-digit number

- Ten-thousands place must be the greatest digit → 9
- Thousands and ones places: next greatest unused digits → 8 and 5

Number: **98675**

Answer: 10273, 98675 ✓

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2. Minimum and maximum digits in sum of two 4-digit numbers

Smallest 4-digit number = 1000
Largest 4-digit number = 9999

Minimum digits in the sum

1000 + 1000 = 2000 → 4 digits

Maximum digits in the sum

9999 + 9999 = 19998 → 5 digits

Answer: 4, 5 ✓

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3. Estimate without actual calculation

Round each number suitably.

(i) 49×61
$\approx 50 \times 60 = 3000$

(ii) $2404 - 305$
$\approx 2400 - 300 = 2100$

(iii) $87 + 21$
$\approx 90 + 20 = 110$

(iv) $492 \div 10$
$\approx 490 \div 10 = 49$

Answers: (i) 3000 (ii) 2100 (iii) 110 (iv) 49 ✓

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4. Make the number using 8, 5, 9, 4

Conditions:

- Biggest digit in hundreds place → 9 in hundreds
- 5 in ones place
- 4 in tens place
- 8 in thousands place

Number formed: **8945**

Answer: 8945 ✓

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5. Find the number

Conditions:

- Greater than number of days in November → greater than 30
- Less than 72
- Even number
- Multiple of 7
- Sum of digits = number of days in a week = 7

Multiples of 7 between 31 and 71: 35, 42, 49, 56, 63, 70

Even numbers among them: 42, 56, 70

Check sum of digits:

- 4 + 2 = 6
- 5 + 6 = 11
- 7 + 0 = 7 ✓

Only **70** satisfies all conditions.

Answer: 70 ✓

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6. Determine the sum by suitable grouping

(i) 547 + 315 + 453

Group 547 and 453:
547 + 453 = 1000
1000 + 315 = **1315**

(ii) 578 + 287 + 213

Group 287 and 213:
287 + 213 = 500
578 + 500 = **1078**

(iii) 1053 + 273 + 247 + 727

Group 1053 and 247: 1053 + 247 = 1300
Group 273 and 727: 273 + 727 = 1000
Total = 1300 + 1000 = **2300**

(iv) 1651 + 759 + 525 + 241 + 3349

Group 1651 and 3349: 1651 + 3349 = 5000
Group 759 and 241: 759 + 241 = 1000
Now 5000 + 1000 + 525 = **6525**

Answers: (i) 1315 (ii) 1078 (iii) 2300 (iv) 6525 ✓

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7. Multiply 94 and 985 by expressing 94 as a sum of two numbers

Write $94 = 100 - 6$

985×94

$= 985 \times (100 - 6)$

$= 985 \times 100 - 985 \times 6$

= 98500 − 5910
= **92590**

Answer: 92590 ✓

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8. Products by suitable rearrangement

(i) 125 × 8 × 40 × 25

(125 × 8) = 1000
(40 × 25) = 1000
1000 × 1000 = **1000000**

(ii) 2197 × 125 × 8

(125 × 8) = 1000
2197 × 1000 = **2197000**

(iii) 20 × 1548 × 50

(20 × 50) = 1000
1548 × 1000 = **1548000**

(iv) 5544 × 25 × 40

(25 × 40) = 1000
5544 × 1000 = **5544000**

Answers:
(i) 1000000 (ii) 2197000 (iii) 1548000 (iv) 5544000 ✓

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9. Product of odd numbers below 10

Odd numbers below 10: 1, 3, 5, 7, 9
Take any two:
1 × 3 = 3 (odd)
3 × 5 = 15 (odd)
5 × 7 = 35 (odd)
7 × 9 = 63 (odd), etc.
Every time, the product of two odd numbers is odd.

Answer: Yes ✓

MENTAL MATHEMATICS – CLASS 6
EXERCISE 2 – Based on Integers

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1. Using number line, do the following :

(i) 6 + (–3)
6 + (–3) means move 6 units to the right from 0, then 3 units to the left.

6 – 3 = 3
Answer: 3

(ii) 10 – 15
10 – 15 = 10 + (–15).
From 10 move 15 units to the left, we reach –5.
Answer: –5

(iii) –5 – 3
–5 – 3 = –5 + (–3).
From –5 move 3 units more to the left: –6, –7, –8.
Answer: –8

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2. Find the sum of the following :

(i) 100 + (–55) + (–45)
= 100 – 55 – 45
First, 100 – 55 = 45
Then, 45 – 45 = 0
Answer: 0

(ii) (–5) + 3 + 7
= 3 + 7 – 5
= 10 – 5 = 5
Answer: 5

(iii) (–53) + (–5) + (–100)
All are negative, so add the numbers and put minus sign.
53 + 5 + 100 = 158
So, sum = –158
Answer: –158

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3. Subtract the sum of –185 and 300 from –80.

First, find the sum of –185 and 300.
–185 + 300 = 300 – 185 = 115

Now subtract this sum from –80:
–80 – 115 = –(80 + 115) = –195

Answer: –195

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4. Write answer in the blanks :

(i) Which is greater: –4 or –5?
On the number line –4 lies to the right of –5, so –4 is greater.
Answer: –4

(ii) Which is smaller: 9 or –99?
All negative numbers are less than positive numbers. So –99 is smaller.
Answer: –99

(iii) 0, –1, –2, –3, 4 can be written in increasing order as:
Smallest to greatest: –3, –2, –1, 0, 4
Answer: –3, –2, –1, 0, 4

(iv) 0, –2, –3, –5 can be written in ascending order as:
Ascending = increasing: –5, –3, –2, 0
Answer: –5, –3, –2, 0

(v) 1, –2, –4, 5 can be written in descending order as:
Greatest to smallest: 5, 1, –2, –4
Answer: 5, 1, –2, –4

(vi) 0, –1, 2, –3, 5 can be written in decreasing order as:
Decreasing = descending: 5, 2, 0, –1, –3
Answer: 5, 2, 0, –1, –3

(vii) Any number lying to the _____ of zero on the number line is positive, whereas any number lying to the _____ of zero is negative.
Positive numbers are to the right, negative numbers are to the left.
Answer: right, left

(viii) –9 lies to the _____ of 9 on the number line so that –9 < 9.
–9 is on the left of 9.
Answer: left

(ix) The number 0 (zero) lies to the _____ of –2 on the number line so that 0 > –2.
0 is on the right of –2.
Answer: right

(x) Zero is greater than every _____ integer and less than every _____ integer.
Zero is greater than all negative integers and less than all positive integers.
Answer: negative, positive

MENTAL MATHEMATICS – EXERCISE 4
(Based on Sets)
Full Solutions with Explanation

1. Write True or False

(i) A set of the letters of the word 'SCHOOL' = {S, C, O, L, H}

Explanation:
The word "SCHOOL" contains the letters S, C, H, O, O, L.
In a set, **repetition is not allowed**, so repeated O and L appear only once.
Thus the set is correctly written.

Answer: True ✓ (matches answer key)

(ii) If $A = \{x : x = 3n - 5, n \in W\}$, then $-5 \in A$.

Explanation:
Take $n = 0$ (since $0 \in W$, the set of whole numbers).
$x = 3(0) - 5 = -5$.
So -5 is indeed a member of A.

Answer: True ✓ (matches answer key)

(iii) A collection of good persons of a country is a set.

Explanation:
The term "good persons" is **not well-defined** because goodness is a matter of opinion.
A set must have clearly defined elements.
So this cannot form a set.

Answer: False ✓ (matches answer key)

(iv) If $A = \{0, 3, 6, 9, \ldots, 33\}$, then $n(A) = 11$.

Explanation:
This is an arithmetic sequence of multiples of 3 from 0 to 33.
General term = 3n
Values: 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33
Number of terms = 12, not 11.

Answer: False ✓ (matches answer key)

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2. State the following set in Set-builder form

Given:
A = {Integers greater than −12 and divisible by 5}

Explanation:
A number divisible by 5 can be written as x = 5n.
Condition: x > −12.
So the set-builder form is:

Answer:
A = {x : x = 5n, n ∈ I, x > −12} ✓ (matches answer key)

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3. State the following set in Roster form

Given:
A = {x : x − 3 ≤ 0, x ∈ W}

Explanation:
Solve x − 3 ≤ 0 → x ≤ 3.
Since x ∈ W (whole numbers): 0, 1, 2, 3.

Answer:
A = {3, 2, 1, 0} ✓ (matches answer key)

(Note: Order does not matter in sets; book uses 3, 2, 1, 0.)

**4. A set is defined as P = {x | x ∈ W and x < 0}.

What type of set is it?**

Explanation:
Whole numbers (W) = {0, 1, 2, 3, …}.
No whole number is less than 0.
Therefore, the set has **no elements**.

Answer: Empty set ✓ (matches answer key)

MENTAL MATHEMATICS – CLASS 6
EXERCISE 5 – Based on Fractions
(Full solutions with steps)

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1. Which of the following pairs has/have equivalent fractions?

To check equivalence, simplify or cross-multiply.

(i) 3/5 and 15/25
3/5 = 3×5 / 5×5 = 15/25
So they are equal.

(ii) 4/5 and 28/35
28/35 = (28 ÷ 7)/(35 ÷ 7) = 4/5
So they are equal.

(iii) 5/6 and 25/36
5/6 = 0.833… and 25/36 ≈ 0.694… (or cross-multiply: 5×36 = 180, 6×25 = 150; not equal).
Not equivalent.

(iv) 3/7 and 21/28
3/7 = 0.428…, 21/28 = 0.75 (or 3×28 = 84, 7×21 = 147; not equal).
Not equivalent.

(v) 4/11 and 9/16
4×16 = 64, 11×9 = 99 → not equal.
Not equivalent.

(vi) 7/25 and 49/175
49/175 = (49 ÷ 7)/(175 ÷ 7) = 7/25
So they are equal.

Answer: (i), (ii) and (vi) ✓

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2. Write the following fractions in their lowest terms:

(i) 5/10
Divide numerator and denominator by 5:
5 ÷ 5 / 10 ÷ 5 = 1/2

(ii) 9/27
Divide by 9: 9 ÷ 9 / 27 ÷ 9 = 1/3

(iii) 6/9
Divide by 3: 6 ÷ 3 / 9 ÷ 3 = 2/3

(iv) 42/49
Divide by 7: 42 ÷ 7 / 49 ÷ 7 = 6/7

(v) 33/77
Divide by 11: 33 ÷ 11 / 77 ÷ 11 = 3/7

(vi) 81/144
Common factor 9: 81 ÷ 9 / 144 ÷ 9 = 9/16

Answers:
(i) 1/2 (ii) 1/3 (iii) 2/3 (iv) 6/7 (v) 3/7 (vi) 9/16 ✓

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3. Write the fraction with given numerator (N) and denominator (D). Classify as proper or improper.

(i) N = 3, D = 5 → 3/5 (numerator < denominator → proper)
(ii) N = 5, D = 9 → 5/9 (proper)
(iii) N = 3, D = 7 → 3/7 (proper)
(iv) N = 15, D = 4 → 15/4 (numerator > denominator → improper)
(v) N = 9, D = 2 → 9/2 (improper)
(vi) N = 7, D = 11 → 7/11 (proper)

Proper fractions: (i), (ii), (iii), (vi)
Improper fractions: (iv), (v) ✓

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4. Write an equivalent fraction with the given denominator (D):

Rule: multiply numerator and denominator by same number.

(i) 3/5, D = 15
5 × 3 = 15, so multiply top by 3:
3 × 3 / 5 × 3 = 9/15

(ii) 2/7, D = 21
7 × 3 = 21 → multiply numerator by 3: 2 × 3 = 6
Fraction = 6/21

(iii) 3/11, D = 44
11 × 4 = 44 → numerator 3 × 4 = 12
Fraction = 12/44

(iv) 1/2, D = 12
2 × 6 = 12 → 1 × 6 = 6
Fraction = 6/12

(v) 3/8, D = 40
8 × 5 = 40 → 3 × 5 = 15
Fraction = 15/40

(vi) 7/9, D = 108
9 × 12 = 108 → 7 × 12 = 84
Fraction = 84/108

Answers:
(i) 9/15 (ii) 6/21 (iii) 12/44 (iv) 6/12 (v) 15/40 (vi) 84/108 ✓

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5. Classify as like fractions or unlike fractions
   (Like fractions = same denominator)

(i) 1/7, 1/7 → same denominator → like
(ii) 2/7, 3/9 → denominators 7 and 9 → unlike
(iii) 1/3, 2/3 → same denominator 3 → like
(iv) 2/11, 3/11, 5/11 → same denominator 11 → like
(v) 5/9, 9/5 → denominators 9 and 5 → unlike
(vi) 1/5, 5/6, 6/7 → denominators 5, 6, 7 → unlike

Like fractions: (i), (iii), (iv)
Unlike fractions: (ii), (v), (vi) ✓

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6. Arrange the following fractions in ascending order
   (Ascending = smallest to greatest)

(i) 1/11, 9/11, 3/11, 5/11, 2/11
All have denominator 11; compare numerators:
1, 2, 3, 5, 9
Ascending order of fractions:
1/11, 2/11, 3/11, 5/11, 9/11

(ii) 1/9, 7/9, 3/9, 2/9, 5/9
Same denominator 9 → order by numerators:
1, 2, 3, 5, 7
Fractions: 1/9, 2/9, 3/9, 5/9, 7/9

(iii) 2/5, 4/5, 1/5, 3/5
Same denominator 5 → numerators 1, 2, 3, 4
Fractions: 1/5, 2/5, 3/5, 4/5

(iv) 1/24, 7/24, 13/24, 5/24, 11/24
Same denominator 24 → numerators 1, 5, 7, 11, 13
Fractions: 1/24, 5/24, 7/24, 11/24, 13/24

Answers:
(i) 1/11, 2/11, 3/11, 5/11, 9/11
(ii) 1/9, 2/9, 3/9, 5/9, 7/9

(iii) 1/5, 2/5, 3/5, 4/5
(iv) 1/24, 5/24, 7/24, 11/24, 13/24 ✓

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7. Arrange the following fractions in descending order
   (Descending = greatest to smallest)

(i) 7/11, 2/11, 5/11, 1/11, 9/11
Same denominator 11 → order numerators 9, 7, 5, 2, 1
Fractions: 9/11, 7/11, 5/11, 2/11, 1/11

(ii) 3/7, 1/7, 5/7, 2/7, 6/7
Same denominator 7 → numerators 6, 5, 3, 2, 1
Fractions: 6/7, 5/7, 3/7, 2/7, 1/7

(iii) 5/9, 8/9, 1/9, 3/9, 7/9
Same denominator 9 → numerators 8, 7, 5, 3, 1
Fractions: 8/9, 7/9, 5/9, 3/9, 1/9

(iv) 1/6, 5/6, 2/6, 3/6, 4/6
Same denominator 6 → numerators 5, 4, 3, 2, 1
Fractions: 5/6, 4/6, 3/6, 2/6, 1/6

Answers:
(i) 9/11, 7/11, 5/11, 2/11, 1/11
(ii) 6/7, 5/7, 3/7, 2/7, 1/7
(iii) 8/9, 7/9, 5/9, 3/9, 1/9
(iv) 5/6, 4/6, 3/6, 2/6, 1/6 ✓

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8. Add the following:

(i) 1/11 + 5/11 + 2/11
Same denominator → add numerators:
1 + 5 + 2 = 8 → 8/11

(ii) 11/25 + 1/25 + 8/25
Same denominator 25 → 11 + 1 + 8 = 20 → 20/25
Simplify: divide by 5 → 4/5

(iii) 1/2 + 1/3 + 1/4
LCM of 2, 3, 4 = 12
1/2 = 6/12, 1/3 = 4/12, 1/4 = 3/12
Sum = (6 + 4 + 3)/12 = 13/12

(iv) 1/3 + 1/5 + 4/15
LCM of 3, 5, 15 = 15

1/3 = 5/15, 1/5 = 3/15, 4/15 = 4/15
Sum = (5 + 3 + 4)/15 = 12/15 = 4/5

(v) 1/3 + 2/5 + 3/10
LCM of 3, 5, 10 = 30
1/3 = 10/30, 2/5 = 12/30, 3/10 = 9/30
Sum = (10 + 12 + 9)/30 = 31/30

(vi) 1/4 + 5/6 + 3/8
LCM of 4, 6, 8 = 24
1/4 = 6/24, 5/6 = 20/24, 3/8 = 9/24
Sum = (6 + 20 + 9)/24 = 35/24

Answers:
(i) 8/11 (ii) 4/5 (iii) 13/12 (iv) 4/5 (v) 31/30 (vi) 35/24 ✓

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9. Simplify:

(i) 1/2 + 1/3 − 1/5
LCM of 2, 3, 5 = 30
1/2 = 15/30, 1/3 = 10/30, 1/5 = 6/30
So total = (15 + 10 − 6)/30 = 19/30

(ii) 2/3 + 4/5 − 7/15
LCM of 3, 5, 15 = 15
2/3 = 10/15, 4/5 = 12/15, 7/15 = 7/15
Total = (10 + 12 − 7)/15 = 15/15 = 1

(iii) 2/3 + 3/4 − 3/8
LCM of 3, 4, 8 = 24
2/3 = 16/24, 3/4 = 18/24, 3/8 = 9/24
Total = (16 + 18 − 9)/24 = 25/24

(iv) 6/7 − 1/2 − 1/3
LCM of 7, 2, 3 = 42
6/7 = 36/42, 1/2 = 21/42, 1/3 = 14/42
Total = (36 − 21 − 14)/42 = 1/42

Answers:
(i) 19/30 (ii) 1 (iii) 25/24 (iv) 1/42 ✓

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10. Convert the following fractions into decimals:

(i) 2/10
Divide 2 by 10: 2 ÷ 10 = 0.2

(ii) 9/10
9 ÷ 10 = 0.9

(iii) 1/5
Make denominator 10: 1/5 = 2/10 = 0.2

(iv) 1/2
1 ÷ 2 = 0.5

(v) 27/100
27 ÷ 100 = 0.27

(vi) 21/1000
21 ÷ 1000 = 0.021

Answers:
(i) 0.2 (ii) 0.9 (iii) 0.2 (iv) 0.5 (v) 0.27 (vi) 0.021 ✓

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 6 – BASED ON DECIMALS

Question 1

Write each of the following in expanded form:

(i) 1.7

Solution:
1.7 means 1 ones and 7 tenths
= 1 + 7/10

(ii) 23.65

= 2 tens + 3 ones + 6 tenths + 5 hundredths
= 2×10 + 3 + 6/10 + 5/100

(iii) 416.377

= 4 hundreds + 1 ten + 6 ones + 3 tenths + 7 hundredths + 7 thousandths
= 4×100 + 1×10 + 6 + 3/10 + 7/100 + 7/1000

(iv) 2308.009
= 2×1000 + 3×100 + 0×10 + 8 + 9/1000

(v) 30.0952

= 3×10 + 0×1 + 9/100 + 5/1000 + 2/10000

Question 2

Compare using > or < :

(i) 5.91 ___ 5.89
91 hundredths > 89 hundredths
Answer: 5.91 > 5.89

(ii) 23.175 ___ 23.201
175 thousandths < 201 thousandths
Answer: 23.175 < 23.201

(iii) 5.94 ___ 6.037
5 < 6
Answer: 5.94 < 6.037

(iv) 19.705 ___ 19.703

705 > 703
Answer: 19.705 > 19.703

(v) 2.9387 ___ 3
2 < 3
Answer: 2.9387 < 3

Question 3

Simplify:

(i) 6 − 0.4 − 0.87 − 0.03
6 − 0.4 = 5.6
5.6 − 0.87 = 4.73
4.73 − 0.03 = **4.7**

(ii) 1.01 − 0.1 − 0.001 + 10

1.01 − 0.1 = 0.91
0.91 − 0.001 = 0.909
0.909 + 10 = **10.909**

(iii) 31.53 − 9.84 − 6.86 − 12.08

31.53 − 9.84 = 21.69
21.69 − 6.86 = 14.83
14.83 − 12.08 = **2.75**

(iv) 1050.7 − 12.04 − 19.58 − 40.87

1050.7 − 12.04 = 1038.66
1038.66 − 19.58 = 1019.08
1019.08 − 40.87 = **978.21**

Question 4

Convert:

(a) 25 ml to litre
1000 ml = 1 l
25 ÷ 1000 = **0.025 l**

(b) 732 ml = 0.732 l

(c) 5 l = 5 ÷ 1000 = 0.005 kl

(d) 358 l = 0.358 kl

Question 5

Arrange smallest to largest:

(a) 500 ml, 2 l, 0.04 kl

500 ml = 0.5 l
0.04 kl = 40 l

Order: **500 ml, 2 l, 0.04 kl**

(b) 300 ml, 3 l, 0.03 kl

300 ml = 0.3 l
0.03 kl = 30 l

Order: **300 ml, 3 l, 0.03 kl**

Question 6

0.009 l < 1 ml ?

1 ml = 0.001 l

0.009 l > 0.001 l

Answer: No

Question 7

(i) 13 km 831 m + 5 km 78 m

831 m + 78 m = 909 m
13 km + 5 km = 18 km

Answer: 18 km 909 m

(ii) 87 m 29 cm + 92 m 8 cm

29 cm + 8 cm = 37 cm
87 m + 92 m = 179 m

Answer: 179 m 37 cm

Question 8

Total grams:

879 g + 98 g + 285 g = 1262 g
54 mg + 653 mg + 6 mg = 713 mg

= 1.262713 kg

Question 9

8 m 57 cm − 3 m 98 cm

Borrow 1 m = 100 cm

157 cm − 98 cm = 59 cm
7 m − 3 m = 4 m

Answer: 4.59 m

Question 10

9687 mm = 968.7 cm

8932 − 968.7 = **7963.3 cm**

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 7 – Ratio & Proportion

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1. True or False

(i) A ratio is a fraction. It cannot be an integer.
False (Example: 4 : 2 = 2)

(ii) Ratio is comparison by difference.
False (Ratio is comparison by division)

(iii) A ratio has no unit.
True

(iv) Ratio compares only two numbers.
True

(v) Ratio can compare quantities of same kind only.
False

(vi) Simplest form means no common factor except 1.
True

2. Simplest Form

(i) 2 hours : 40 seconds
2 hr = 7200 sec
7200 : 40 = 180 : 1

(ii) 5 m : 60 cm
500 : 60 = 25 : 3

(iii) 400 g : 4 kg
400 : 4000 = 1 : 10

3. Larger Ratio

(i) 5:1 > 1:5
(ii) 7:5 > 3:5
(iii) 1:8 > 1:9
(iv) 3:4 > 3:5

4. Find x

(i) 6:15 = 2:x
6/15 = 2/x → x = 5

(ii) 3:x = 12:16
3/x = 12/16 → x = 4

(iii) 2:4 = x:10
2/4 = x/10 → x = 5

(iv) x:3 = 8:12
x/3 = 8/12 → x = 2

5. Fourth term = 36

6. Cost of 6 m cloth = ₹120

7. Words in 3 minutes = 135

8. Cost of 5 notebooks = ₹15

9. Wheat = 50 quintals

10. Cost of 4 toys = ₹800

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 8 – Percentage

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1. 0.05 × 100 = 5%

2. 3/2 = 150% ≠ 105%
Answer: No

3. (60/80)×100 = 75%

4. 45% of x = 117
x = 260

5. True

6. (125/2000)×100 = 6.25%

7. Salary = ₹7000

8. Income = ₹12500

9. Girls = 16

10. 11 1/9 %

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 9 – Algebra

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1.
(i) x/y – 2
(ii) ½(x + 2y)
(iii) 4x + 2y + 9 km
(iv) x + 46 marks

2. Coefficient:
(i) 2
(ii) –3
(iii) –2qr
(iv) –1
(v) $3y^2z$
(vi) –2pr

3. Powers: 2, 1, 3, 5

4. Numerical coefficients:
1, –3, 2, –5, 3

5.
Monomials: $2x^4$, $–3y^2$
Binomials: $5x^2–3xy$, pq+rst
Trinomials: 3x–2y+4z , $5x^3y^2+4y^2z–z^5$, $ax–by+cz^2$

6.
(i) x^2, $–2x^2$
(ii) –bc, cb
(iii) $–2ab^2$, $5b^2a$
(iv) xyz^2, z^2xyz, y^2xzx, xzy^2

7.
(i) 9x = 18
(ii) 2x – 3 = 35
(iii) 7x = 13x – 12
(iv) 2x + 9 = 13
(v) x/3 – 1 = 1

8.
(i) x = 6
(ii) x = 13
(iii) y = 10
(iv) y = 5
(v) t = 9
(vi) y = 12

9.
(i) x = 21
(ii) x = –2
(iii) x = 2
(iv) y = –5
(v) x = 2

10.
(a) x = 5
(b) y = 6
(c) z = –72

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 10 – Geometry

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1.
(i) Lines l and p
(ii) F

2.
(i) EFGH
(ii) GH
(iii) EH

3.
(i) ΔABC, ΔBEC, ΔDBC
(ii) ΔABD, ΔABE, ΔAED

(iii) ΔABD, ΔABE, ΔAED
(iv) None
(v) None
(vi) No

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 11 – Understanding Elementary Shapes

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Q1. Angle between hands of a clock:
Formula: Each hour = 30°

(i) 12 o'clock:
Hands overlap.
Angle = 0°

(ii) 3 o'clock:
3 × 30° = 90°

(iii) 9 o'clock:
9 × 30° = 270°

(iv) 6 o'clock:
6 × 30° = 180°

Q2. Direction:
Facing South

(i) Turn left once → East
(ii) Turn left twice → North
(iii) Turn left thrice → West
(iv) Turn left four times → South

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 12 – Symmetry

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Q1. Line of symmetry = l1
Q2. Lines of symmetry = 4
Q3. Rhombus lines of symmetry = 2
Q4. Mirror image drawn on dotted line
Q5. Distance = 2 cm and 4 cm

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 13 – Practical Geometry

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Q1. (i) One perpendicular
(ii) One perpendicular

Q2. Construction: Copy line AB using compass

Q3. Construction: AB = 3 × PQ

Q4. Construction: Draw perpendicular at point P

Q5. Construction: Draw 135° angle and bisect

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 14 – Mensuration

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Formulas:
Perimeter rectangle = 2(l+b)
Area rectangle = l×b
Perimeter square = 4s
Area square = s^2
Volume cuboid = l×b×h
TSA cube = $6a^2$

Q1 True/False:
(i) True

(ii) True
(iii) False
(iv) True
(v) False
(vi) False
(vii) True
(viii) False
(ix) True

Q2.
$2(20+15)=70$ cm

Q3.
Area $=14\times12=168$
Cost $=168\times25=₹4200$

Q4.
Perimeter$=4\times20.9=83.6$
Cost$=83.6\times9=₹752.40$

Q5.
$16=4s \rightarrow s=4$
Area$=4^2=16$ cm²

Q6.
(i) Doubled
(ii) Doubled
(iii) Four times

Q7.
One-fourth

Q8.
$20.5\times12=246$ cm³

Q9.
$2(lb+bh+lh)-lb$
$2(4000+3000+4800)-4000=19600$ cm²

Q10.
$6a^2=486 \rightarrow a=9$
Volume$=9^3=729$ cm³

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MENTAL MATHEMATICS – CLASS 6

EXERCISE 15 – Data Handling

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Q1.
(i) Ganesh
(ii) 70
(iii) Ram
(iv) 40
(v) 15

Q2.
(i) Birthdays of class V students
(ii) March & September
(iii) August
(iv) March & September; January & July; February, April, June, October; May & December
(v) Number of birthdays
(vi) Months