CHRIST KING HR. SEC. SCHOOL, KOHIMA
CLASS -7
SUBJECT – MATHEMATICS (1st Term 2020)

1ST TERM SYLLABUS: 1. Knowing our Numbers (10 marks)
2. Fractions (10 marks)
4. Rational Numbers (12 marks)
8. Ratio & Proportion (12 marks)
10. Lines & Angles (10 marks)
18. Probability (6 marks)

(NOTE: The words in italics are not part of the solution, but explanation on how it is solved for students understanding)

Exercise 1.1 (solutions)

1.

a) (-3)×(+5) = -15 {*here, multiplying two unlike signs results in a negative sign. i.e., - × + = -*}
b) (-7)×(-3) = 21 {*here, multiplying two like signs results in a positive sign. i.e., - × - = +*}
e) (-1861)×0 = 0 {*here, any number multiplied with 0 always results in 0*}
l) (+27)×(+13) = 351 {*here, multiplying two like signs results in a positive sign. i.e., + × + = +*}

**note: A positive number may or may not be indicated with the + sign. eg: +351 is the same as 351, both indicate positive number.*

2.

***Rules for division of integers:*
For integers of like signs, the quotient is positive. i.e., + ÷ + = + and - ÷ - = -
For integers of unlike signs, the quotient is negative. i.e., - ÷ + = - and + ÷ - = -

a) (+8)÷(+2) = +4 or 4 {positive number can be written without the + sign}
b) (-24)÷(-8) = 3
c) (+42)÷((-7) = -6
d) (-36)÷(+6) = 6
e) 0÷(+29) = 0 {any integer divided by 0 is always results in 0}

For Question 3 & 4 refer for answers at the back of the book in the answer keys given.

5. *(hint: similar method applied to the questions solved in Q.1)*

a) -6 × -6 = 36 e) -8 × 0 = 0
c) -8 × 2 = -1 i) +9 × -3 = -27

6. *(hint: similar method applied to the questions solved in Q.2)*

a) 18 ÷ 3 = 6 f) 20 ÷ -4 = -5

e) -6 ÷ -3 = 2 j) -49 ÷ -7 = 7

7. (**hint: same method as applied in solving Q2 & Q6)*

a) $\frac{-48}{-8}$ = 6 {here, -48 ÷ -8 = 6} d) $\frac{-49}{7}$ = -7 {here, -49 ÷ 7 = -7}

8. ***hint: Negative sign multiplied odd number of times results in a negative sign.*
Negative sign multiplied even number of times results in a positive sign.
Positive signs multiplied always results in a positive sign.

c) (-4) × (-4) × (-4) = -64 e) (-1) × (-3) × (+6) = 18

g) (-70) × (-35) × 0 × (-63) = 0

Exercise 1.2 (solutions)

1. a) 7 + 8 + 3 + 2 = (7 + 3) + (8 + 2) = 10 + 10 = 20
=20 = 10 + 10 = 20 = 20
=20 = 20 = 20 = 20.

b) 89 + 36 + 64 + 11
= (89 + 11) + (36 + 64)
= 100 + 100
= 200

c) 43 + 21 + 79
= 43 + (21 + 79)
= 43 + 100
= 143

2. (*refer COMMUTATIVE PROPERTY on pg. 13 and refer answer keys at the back page for answers)

3.
a) (-18 + 4) + 6 = -18 + (6 + 4)

Sol: LHS= (-18 + 4) + 6 {when a number is negative and the other number is positive, we always subtract and keep the sign of the greater number)
= -14 + 6 {here 18 – 4 = 14, and the sign of the greater number is negative, therefore it is – 14}
= - 8 {now that the bracket is solved, we subtract 14 – 6 and keep the sign of the greater number. i.e., - 8}

RHS= -18 + (6 + 4)
= - 18 + 10
= -8
Hence LHS = RHS = - 8

c) (11 + 3) + (-9) = 11 + [3 + (-9)]
Sol: LHS= (11 + 3) + (-9)
= 14 – 9 {here, from the previous step we multiply the positive sign and the negative sign and get – 9}
= 5

RHS= 11 + [3 + (-9)]
= 11 + [3 – 9]
= 11 + (-6)
= 11 – 6
= 5
Hence LHS = RHS = 5

4.
a) (18 – 6) + 3 = 18 – (6 + 3)
Sol: LHS = (18 – 6) + 3
= 12 + 3
= 15

RHS = 18 – (6 + 3)
= 18 – 9
= 9
In this case, LHS ≠ RHS. Therefore the statement is false.

c) (742 – 58) – 10 = 742 – (58 – 10)
Sol: LHS = (742 – 58) – 10
= 684 – 10
= 674

RHS = 742 – (58 – 10)
= 742 – 48
= 694
In this case, LHS ≠ RHS. Therefore the statement is false.

f) 346 – 276 = 276 – 346
Sol: LHS = 346 - 276
= 70

RHS = 276 - 346
= - 70
In this case, LHS ≠ RHS. Therefore the statement is false.

{**hint: refer PROPERTIES OF MULTIPLICATION in the textbook on pages 14 &15 to understand better the solutions solved in Question No. 4}

EXERCISE 1.3

1.

-81	-72	-63	-54	-45	-36	-27	-18	-9	9	9	18	27	36	45	54	63	72	81
-72	-64	-56	-48	-40	-32	-24	-16	-8	8	8	16	24	32	40	48	56	64	72
-63	-56	-49	-42	-35	-28	-21	-14	-7	7	7	14	21	28	35	42	49	56	63
-54	-48	-42	-36	-30	-24	-18	-12	-6	6	6	12	18	24	30	36	42	48	54
-45	-40	-35	-30	-25	-20	-15	-10	-5	5	5	10	15	20	25	30	35	40	45
-36	-32	-28	-24	-20	-16	-12	-8	-4	4	4	8	12	16	20	24	28	32	36
-27	-24	-21	-18	-15	-12	-9	-6	-3	3	3	6	9	12	15	18	21	24	27
-18	-16	-14	-12	-10	-8	-6	-4	-2	2	2	4	6	8	10	12	14	16	18
-9	-8	-7	-6	-5	-4	-3	-2	-1	1	1	2	3	4	5	6	7	8	9
-9	-8	-7	-6	-5	-4	-3	-2	-1	0	1	2	3	4	5	6	7	8	9
9	8	7	6	5	4	3	2	1	-1	-1	-2	-3	-4	-5	-6	-7	-8	-9
18	16	14	12	10	8	6	4	2	-2	-2	-4	-6	-8	-10	-12	-14	-16	-18
27	24	21	18	15	12	9	6	3	-3	-3	-6	-9	-12	-15	-18	-21	-24	-27
36	32	28	24	20	16	12	8	4	-4	-4	-8	-12	-16	-20	-24	-28	-32	-36
45	40	35	30	25	20	15	10	5	-5	-5	-10	-15	-20	-25	-30	-35	-40	-45
54	48	42	36	30	24	18	12	6	-6	-6	-12	-18	-24	-30	-36	-42	-48	-54
63	56	49	42	35	28	21	14	7	-7	-7	-14	-21	-28	-35	-42	-49	-56	-63
72	64	56	48	40	32	24	16	8	-8	-8	-16	-24	-32	-40	-48	-56	-64	-72
81	72	63	54	45	36	27	18	9	-9	-9	-18	-27	-36	-45	-54	-63	-72	-81

**hint: multiply the numbers diagonally.
**Also applying the basic rules of multiplying like signs and unlike signs. i.e., - × - = + ; + × + = + ; - × + = - ; + × - = -

2.

b) [(-7) × (-9)] × 3 = (-7) ×[(-9) × (3)] {**To understand better in solving this set of questions, refer textbook pg. 16 & 17 SIMPLIFICATION OF EXPRESSIONS}

Sol: LHS = [(-7) × (-9)] × 3
= 63 × 3
= 189

RHS = (-7) × [(-9) × (3)]
= (-7) × (-27)
= 189

Hence, LHS = RHS = 189

3. ** Refer COMMUTATIVE PROPERTY of MULTIPLICATION in the textbook on pg. 14 for better understanding on how to solve and the answer key at the backpage for answers.

4.

a) 2 + 0 = 0 b) 1 + (-1) = 0 c) 4 + (-4) = 0 d) -3 + 3 = 0 e) -1 + 1 = 0 f) -3 + 3 = 0

5. Refer back page answer keys for answers.

6.

b) 72 (36 + 14)

Sol: 72 × 50 {always solve the sum inside the bracket, if any first. Then, open the bracket and work out the next step to arrive at the final answer}

= 3600

d) (-6) × 30 + (-6) × 20

Sol: (-6) × [30 + 20] {here we apply distributive property, i.e., multiplication distributes over addition}

= (-6) × 50

= -300

e) 18 × (-16) + 2 × (-16)

Sol: (-16) × [18 + 2] {here, we apply distributive property}

= (-16) × 20

= -320

h) 76 + (-18) + 76 × 18

Sol: 76 × [-18 +18] {here, we apply distributive property}

= 76 × 0

= 0

i) 1673 × 99 – (-1673)

Sol: 1673 × 99 + 1673

= 165627 + 1673

= 167300

7.

**NOTE: in this set of questions, we apply the BODMAS rule. Refer pg. 16 & 17 in textbook.

** Very often we use more than one set of brackets. In such cases, the expressions within the brackets are simplified in the order ¯, ( ), { }, and [ ].

a) (-21) × [(+16) + (-13)]

Sol: (-21) × [+16 – 13]

=(-21) × 3

= - 63

9.

c) -7 + 2 × (-3) + 3 – (-10) – 48 ÷ 6

Sol: -7 + 2 × (-3) + 3 + 10 – 8 = -21 + 13

= -7 – 6 + 3 + 10 – 8 = -8

d) -17 + [2 – {(-8) + 3 – (9 × $\overline{6+1}$ - 13 × 3)}]

Sol: -17 + [2 – {(-8) + 3 – (9 × 7 – 13 × 3)}]

= -17 + [2 – {(-8) + 3 – (63 – 39)}]

= -17 + [2 – {(-8) + 3 – 24}]

= -17 + [2 – {-32 + 3}]

= -17 + [2 – (-29)]

= -17 + [2 + 29]

= -17 + 31

= 14

EXERCISE: 1.4

1.

Sol: Balance on 01.01.2014 = ₹ 2500

Money deposited in January = ₹ 1250

Money withdrawn in February = ₹ 750

Money in his account in February = ₹ (2500 + 1250 – 750)

= ₹ 3750 – 750

= ₹ 3000

Money deposited in March = ₹ 500

Money withdrawn in March = ₹300

Therefore balance on 01.04.2014 = ₹ (3000 + 500 – 300)

= ₹ 3500 – 300

= ₹ 3200

3.

Sol: Let the other number be x

One of the numbers = -7

Product of the numbers = 105

A.P.Q

X × -7 = 105

X = 105 ÷ -7

= -15

Therefore the other number = x
= -15

4.

Sol: Original cost of one book = ₹96

Then, cost of 60 books = ₹ 96 × 60
= ₹ 5760

Since there was a mistake of taking ₹ 5 less of each book in the bill,
Cost calculated = ₹ 91 × 60
= ₹ 5460

Therefore difference in the bill = ₹ 5760 - ₹ 5460
= ₹ 300

6.

Sol: Depth dived on the first day = 5 m

Depth dived on the second day = 5 m + 5 m
= 10 m

Depth dived on the third day = 10 m + 5 m
= 15 m

Depth dived on the fourth day = 15 m + 5 m
= 20 m

Depth dived on the fifth day = 20 m + 5 m
= 25 m

8.

Sol: Given,

Speed of the submarine per minute = (-20) m

Distance of the submarine from the water surface at the end of 7 minutes = 7 × (-20) m
= -140 m