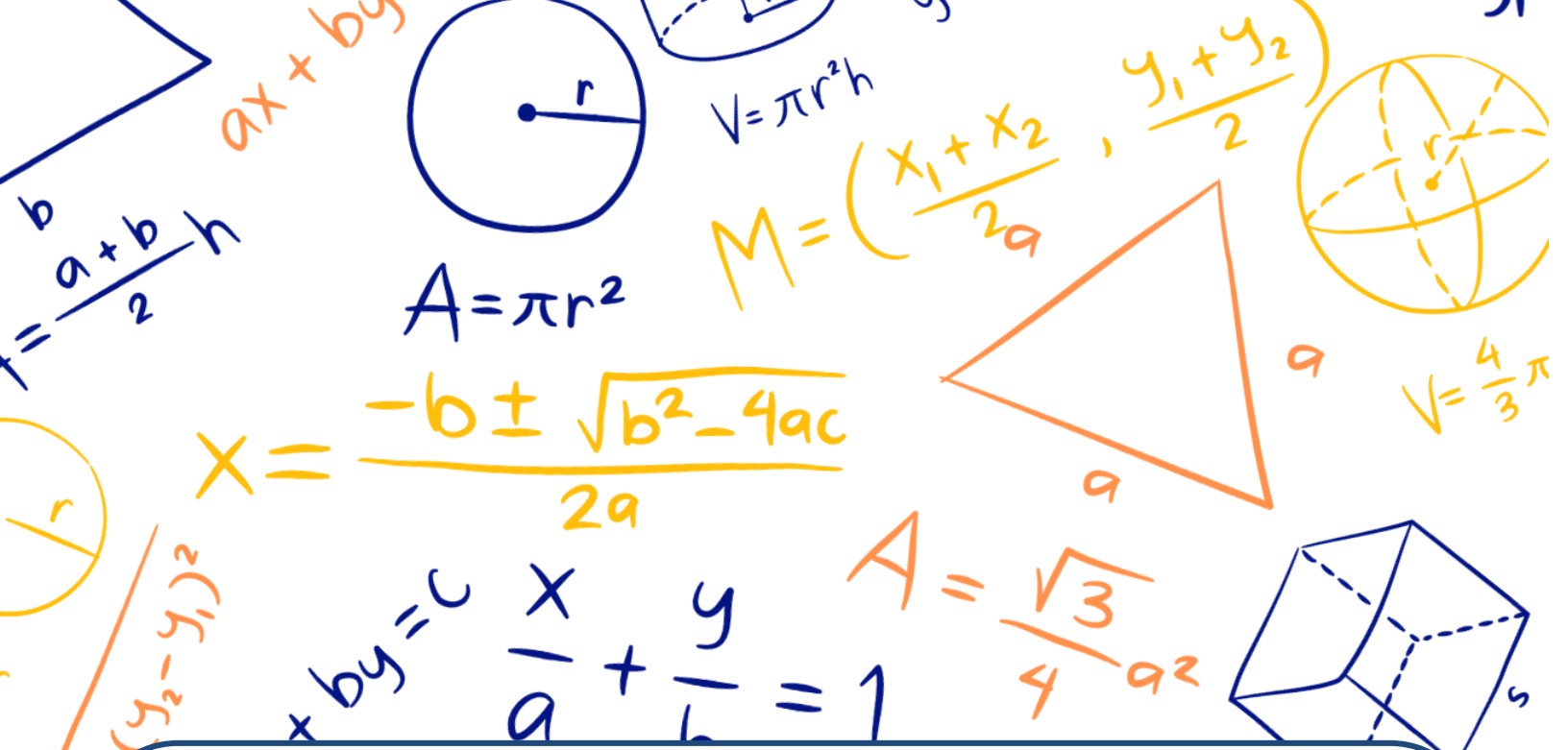


Grade 8 Mathematics
Learner workbook
Integers

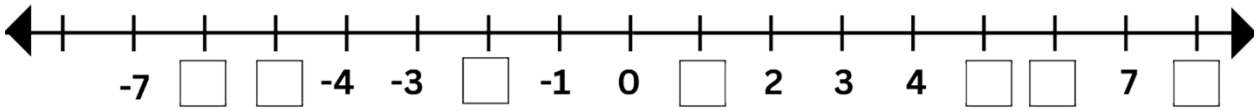
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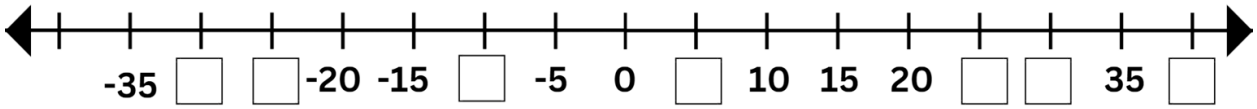
<u>Lesson 1</u>: Count, Order and Compare Integers.

1. Fill in the empty boxes on the following number lines:

1.1.



1.2.



2. Insert $<, >$ *or* $=$ to make each of the following true. Write answers in the spaces provided.

2.1	8	☐	9	2.2.	11	☐	-11
2.3.	0	☐	1	2.4.	-23	☐	-32
2.5.	-11	☐	0	2.6.	237	☐	723

3. Arrange the following in ascending order

3.1 $25\,;\,-20\,;\,-29\,;\,30\,;\,26\,;\,-22$

_____

3.2 $-5\,;\,2\,;\,-3\,;\,0\,;\,4\,;\,-4\,;\,1$

_____

4. Arrange the following in descending order

4.1 $1\,;\,4;\,-3\,;\,-5\,;\,-7\,;\,-9\,;\,9$

_____

4.2 $-53\,;\,-71\,;\,-8\,;\,-94\,;\,-89\,;\,-10$

_____

5. Write the additive inverses of the following

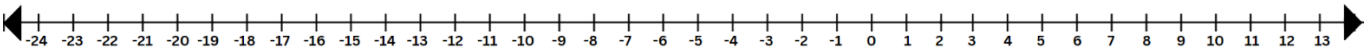
5.1.	$+50$		5.2.	-20	
5.3.	17		5.4.	$+5$	

6. Use additive inverses to show why the following number sentences are true.

6.1. $43 + (-30) = 13$

6.2. $150 + (-80) = 70$

Lesson 2: Addition of Integers



1. Calculate

1.1. $3 + (14)$

1.2. (-8) + (+13) =

1.3. (-15) + (+6) + (+17) =

1.4. (-23) + (6) + (-3) =

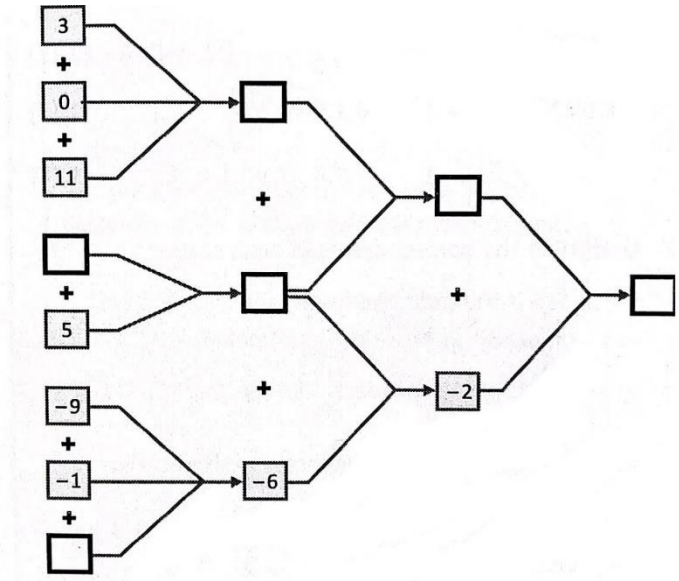
1.5. (-9) + (18) =

1.6. - 12 + 12 - 8 =

1.7. 2 – 6 + 12 =

1.8. 10 – 4 – 8 – 4 =

2. Complete the following addition chain by filling in the empty squares with integers.



Lesson 3: Subtraction of Integers

1. Calculate

1.1. (-3) + 0 + 3 =

1.2. 8 – 9 + (-5) =

1.3. +5 – (+14) =

1.4. -10 – (-9) =

1.5. (+17) – (- 20) – (+12) =

1.6. - 200 – (-120) – 25 =

1.7. 5 – (+7) – (- 8) – 3 – (- 6) =

1.8. (- 4) + (- 1) - (- 2) =

Lesson 4: Multiplication and Division of integers

1. Fill in either < , > or = to make the statements true:

1.1. $2 \times (-6)$ ☐ -8

1.2. $-3 \times (-4)$ ☐ 3×4

2. True or false? Make an x

2.1. $25 = 5 \times (-5)$

2.2. $5 + (-9) = -45$

True	False

3. Calculate these quotients.

3.1. $-64 \div 8 =$

3.2. $\frac{56}{-7} =$

3.3. $-42 \div -7 =$

3.4. $\frac{-169}{+13} =$

3.5. $(-9)(-5) \div 0 =$

4. Calculate the following

4.1. $-\left(\frac{-18}{-3}\right) + (-4) =$

4.2. $-84 \div \left(\frac{-28}{7}\right) =$

4.3. $\frac{(-9)+(16)}{-7} =$

Lesson 5: Calculations with integers- BODMAS

1. Calculate the following
   1.1. $(-5+6)\times(-4) =$
   1.2. $(4-11)(5+9) =$
   1.3. $-7+8(-2)+3 =$
   1.4. $-7-8-(8+4)-3 =$
   1.5. $(-2)-3(-4)+5(-6) =$
2. Mixed: Calculate the following
   2.1. $17+[(-15\div(-5)] =$
   2.2. $\frac{-56}{-7}-(-7) =$
   2.3. $60-8(-5)+\frac{-96}{8} =$
   2.4. $\frac{24+3(-6)}{-16+10} =$
   2.5. $\left(\frac{49}{-7}\right)-\left(\frac{-81}{9}\right) =$

Lesson 6: Squares and Square roots of Integers

1. Evaluate the following square numbers, show the expansion.
   1.1. $4^2 =$
   1.2. $(-3)^2 =$
   1.3. $(1-6)^2 =$
   1.4. $(-2)^2+(-3)^2 =$
2. Insert < or > or = to make each statement true:
   2.1. $(-7)^2 \square 6^2$
   2.2. $(-45)^2 \square (45)^2$

3. True or false? Make an x
   3.1. $(-4)^2 = (-2)^2$
   3.2. $(-6)(7) = (7)(-6)$
   3.3. $-16+4 = 4-16$
   3.4. $(-3)^2 = (-2)^3$

True	False

4. Will the answer be positive or negative or zero?

4.1. $4 - \sqrt{16}$

4.2. $\sqrt{36} - \sqrt{49}$

4.3. $5 - \sqrt{100} + \sqrt{25}$

Lesson 7: Cubes and cube roots of Integers

1. Calculate the cubes and roots, where they can be found.

1.1. $(4)^3 =$

1.2. $(-20)^3 =$

1.3. $-(5)^3 + 2^2 =$

1.4. $(-5)^3 + \sqrt{4} =$

1.5. $\sqrt{16} - 5^3 =$

1.6. $\sqrt[3]{216} =$

1.7. $\sqrt[3]{1000} =$

1.8. $\sqrt[3]{27} =$

1.9. $\sqrt[3]{-125} =$

1.10. $\sqrt{81} + (-8) =$

2. Complete the calculations. Remember the order in which you must solve different parts calculations to make them true.

2.1. $\frac{-96}{\sqrt{144}} \times (-3) =$

2.2. $-2^3 - (-4)^2 =$

2.3. $\frac{-15}{-3} - \sqrt[3]{27} =$

2.4. $7\left(\frac{6^2}{\sqrt[3]{-8}}\right) =$

2.5. $-3(4)^2 \div (-6) =$

Lesson 8: Use of Properties of integers

1. Say whether the following equations are true or false:

1.1. $4 + (-5) = (-5) + 4$

1.2. $-17 - 8 = 8 - 17$

1.3. $-3 + (-6) = (-6) + 3$

True	False

1.4. $13 - 5 \quad = 5 - 13$

1.5. $(-3) - (-2) = (-2) - (-3)$

Waar	Onwaar

2. Four numerical expressions are given below. Which expressions do you expect to have the same answers? Do not do the calculations.

a. 14 x (23 + 58)	b. 23 x (14+58)	c. 14 x 23 + 14 x 58	d. 14 x 23 + 58

3. What property of integers is demonstrated by the fact that two of the above expressions have the same value
4. Consider your answers to the above:
   4.1. Does multiplication distribute over addition in the case of integers?
   4.2. Illustrate your answer with two examples.

Lesson 9: Problem Solving with Integers

1. Write the number sentences for the following statements and then calculate the answer.
   1.1. Subtract thirteen from the product of negative five and negative two.
   1.2. The cube root of the sum of -45 and -19.
   1.3. The difference between nine and the square of negative eight.
   1.4. The sum of the cube root of one thousand and the cube of negative three.
   1.5. The quotient of -84 and 7, minus negative six.

2. The temperature in Cape Town rose to a maximum of $16°C$. From about 18h00 the temperature dropped by $2°C$ per hour for the next 9 hours.
   2.1. What will the minimum temperature be by the next morning?
   2.2. What season is it likely to be?
3. The sum of two integers is -12. One of the integers is -3. What is the other integer?
4. Calculate whether Miguel's Fast Foods made a profit or loss this month. How much was the profit or loss? Sort the facts below into:
   4.1. Amounts received by Miguel's Fast Foods, that is, his income, and
   4.2. Amounts paid out by Miguel's Fast Foods, that is, is expenditure.

   Use the fact that profit/loss = Income – Expenditure

   - Paid R 4 507 on electricity

- Received R6 100 from businesses that place lunch orders via internet transfer.
- Cooking oil cost him R320
- General stock costs R8 490
- Received a provisional tax refund of R5 220
- Wages to three staff members of R3500 each
- His own salary of R24 850
- VAT tax paid to receiver of revenue R11 340
- The cash register totaled R75 900 worth of sales for the month
- Insurance for the shop R880
- Water cost R1400
- Pension fund contributions for workers of R3 150
- Medical aid contributions for workers of R1 500
- Shop rental R12 500.

Income	Expenditure