



Western Cape  
Government  
Education

**GET DIRECTORATE**



# GRADE 9 MATHEMATICS

## CONSOLIDATION MODULE: WHOLE NUMBERS

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## INSTRUCTIONS:

1. DO ALL THE EXERCISES IN YOUR CLASSWORK BOOK SHOWING YOUR CALCULATIONS
2. NUMBER ACCORDING TO THE QUESTIONS PER WORKSHEET
3. RATHER DO NOT USE A CALCULATOR AS THIS SERVES AS EXTRA PRACTICE
4. FIRST ATTEMPT TO ANSWER ALL THE QUESTIONS BEFORE YOU CHECK ANSWERS IN THE MEMORANDA



ENJOY!!

### WORKSHEET 1

**QUESTION 1.** Which of the following numbers are:

$\sqrt{2}$  ;  $\frac{3}{8}$  ;  $-3,3$  ;  $-3$  ;  $\sqrt[3]{5}$  ;  $-7$  ;  $1\frac{1}{2}$  ;  $-\frac{2}{3}$  ;  $\sqrt{169}$  ;  $25$  ;  $\sqrt{10}$

- a) Natural numbers
- b) Integers
- c) Rational numbers
- d) Irrational numbers

**QUESTION 2.** Determine without the use of a calculator.

- a)  $4 \times (-28) =$
- b)  $-6 + 4 \div 2 =$
- c) the difference between  $-16$  and  $-14$
- d)  $(-12)^2 + \sqrt[3]{-1000} =$
- e)  $\sqrt[3]{1000} + \sqrt{64} =$
- f)  $\frac{1}{2} \times \frac{2}{3} \div \frac{1}{3} =$
- g)  $[-3 \times (-8) \div (-4)] \times 3 - (-7) =$

### QUESTION 3.

- a) List all the factors of 54.
- b) Write down the first three multiples of 54.
- c) Write 54 as the product of prime numbers.
- d) Write down all the squares which are less than 54.

**QUESTION 4 :** Arrange the following in ascending order:

- a)  $-1\frac{1}{2}$  ; 0 ; 2 ;  $2\frac{1}{2}$  ;  $-1$
- b)  $-55$  ;  $-505$  ; 5 ; 55 ;  $-155$  ;  $-4$

**QUESTION 5.** Without the use of a calculator

5.1) Convert the decimal numbers to normal fractions in their simplest form.

- a) 12,3
- b) 0,214
- c) -250,005

5.2) Convert the fractions to decimal numbers.

- a)  $\frac{5}{10}$
- b)  $2\frac{1}{4}$
- c)  $-3\frac{3}{8}$

**QUESTION 6.** Write the following in scientific notation.

- a) 54 800 000
- b) 886
- c)  $0,8 \times 10^6$
- d) 0,0756309

**QUESTION 7.** Write the following in decimal form:

- a)  $3 \times 10^4$
- b)  $2,336 \times 10^6$
- c)  $9,563 \times 10^{-4}$

## WORKSHEET 2

**QUESTION 1** Which of the following numbers are:

$\sqrt{16}$  ;  $0,6$  ;  $-6,783$  ;  $\sqrt[3]{25}$  ;  $5\frac{1}{4}$  ;  $\sqrt[3]{-100}$  ;  $\sqrt[3]{-125}$  ;  $25$  ;  $\sqrt{17}$

- a) Natural numbers
- b) Integers
- c) Rational numbers
- d) Irrational numbers

**QUESTION 2.** Determine without the use of a calculator:

- a)  $-8^2 + (-5)^2 - (-4)^3$
- b)  $\{[-15 - (-3 + 2)] \times 3\} \div 6$
- c)  $\sqrt[3]{-64} + \sqrt{64}$
- d)  $3\frac{1}{5} \times 1\frac{7}{8}$
- e)  $2\frac{7}{8} + 2\frac{1}{2} \times \frac{7}{10}$
- f) What is the  $\frac{1}{2}$  of the sum of  $5\frac{3}{4}$  and  $2\frac{2}{8}$
- g) How many times can you subtract  $1\frac{3}{10}$  from  $19\frac{1}{2}$ .

**QUESTION 3.** List the following :

- a) The prime numbers less than 36.
- b) The prime factors of 36.
- c) The even factors of 36.
- d) The compound numbers less than 12.

### QUESTION 4.

- a) Write  $1\frac{5}{8}$  as a decimal fraction.
- b) Convert 1,23 to a percentage.
- c) Convert 345% to a common fraction.

**QUESTION 5.** Write the following in scientific notation

- a) 245 thousand
- b) 30 millionths
- c) 145 7000 000
- d) 0,000 000 000 067
- e)  $1,5 \times 10^5 \times 5 \times 10^4$
- f)  $2,3 \times 10^3 + 6,7 \times 10^4$

**QUESTION 7.** Determine without the use of a calculator and give each answer in scientific and decimal notation.

- a)  $\frac{8,4 \times 10^6}{4 \times 10^3}$
- b)  $\frac{1,8 \times 10^{-6}}{3 \times 10^{-3}}$

## Formule page- Finance

**Simple Interest** :  $A = P \times i \times n$

A = Final Amount

P = Initial or Starting Amount

$$i = \frac{\text{rate}}{100}$$

$n = \text{number of years}$

**Compound Interest** :  $A = P(1 + i)^n$

**Interest = Final - Initial = A - P**

## WORKSHEET 3

### QUESTION 1

- Increase 16 in the ratio 2:5
- Decrease 78 in the ratio 3:2
- Divide R 1 800 in the ratio:  $2 : 2\frac{1}{2} : 4\frac{1}{2}$

### QUESTION 2.

Newlands Cricket Stadium holds approximately 25 000 spectators. A one-day cricket match is attended by 16 460 spectators. What percentage of the seats are taken. Give your answer correct to the nearest percent.

### QUESTION 3.

John walks 3,5 km to school. It takes him 24 minutes to reach school. He forgot his mathematics book at home and runs back home 5 km/h faster than he can walk.

- Write 24 minutes as a fraction of an hour.
- At what speed did he walk to school.
- At what speed did he run back home.
- How long does it take him to run back home.

### QUESTION 4.

Lizelle wants to buy a new big screen TV for R 15 000. She pays a deposit of R2 000. Russels charges 13,5% simple interest per year. She has 4 years to pay off the TV in 48 equal monthly instalments.

- How much interest will she pay over 4 years.
- What is the total amount she will pay for the TV.
- What is her monthly instalment.

## **WORKSHEET 4**

### **QUESTION 1**

There is approximately  $5,02 \times 10^{23}$  water molecules in one teaspoon of water. Calculate the number of water molecules in 5 teaspoons of water and give your answer in scientific notation.

### **QUESTION 2**

- a) Simplify the following ratios :
- i) 18 : 20
  - ii) 154 : 132
- b) Increase 72 in the ratio 5: 3
- c) Decrease 117 in the ratio 10 : 13
- d) Divide 210 in the ratio 3 : 5 : 7
- e) A car drives at a constant speed and covers 40 km in 24 minutes. What distance will be covered in 1 hour 18 minutes if the same constant speed is maintained.
- f) An athlete covers 400 meters in 49,32 seconds. Calculate his speed.

### **QUESTION 3.**

Mr. Moodley drives every day  $12\frac{3}{4}$  km to work. The first  $3\frac{2}{5}$  of the trip is on gravel road and the rest on tar road. What distance is he driving on tar road.

### **QUESTION 4.**

- a) R5 800 is invested at 8,25% per annum simple interest. Calculate the final amount that will be available after four years.
- b) If R 3 000 is invested at 7% per annum simple interest, how long will it take to reach a value of R 4 620.
- c) R 5 000 is invested for five years at 7% per annum compound interest. Calculate the final amount and the value of the compound interest earned. Calculate your answer to two decimal places.

### **QUESTION 5.**

Ms Zama ordered 6 pizzas for her family. Arriving at home, she realise that her family has eaten  $4\frac{3}{4}$  of the pizzas which was delivered.

- a) She ate 60% of the left over 6 pizzas. What fraction of a pizza did she eat.
- b) Write the fraction of the pizza Ms Zama ate as a decimal number.

### **QUESTION 6.**

A tourist have £1 806 and wants to spend seven days in South-Africa. His travel arrangements are as follow: He plans to hire a car for seven days at R 120 per day. The first night he books a room for R 600 per night. The next day he wants to go on a safari for six days at a cost of R 20 000. Do the tourist have enough money to cover his trip to South-Africa if the exchange rate is £1 = R11,50.

# WORKSHEET 1-MEMORANDUM

## QUESTION 1.

- a) 25;  $\sqrt{169}$ ;  
b) -3; -7;  $\sqrt{169}$ ; 25  
c)  $\frac{3}{8}$ ; -3,3; -3; -7;  $1\frac{1}{2}$ ;  $-\frac{2}{3}$ ;  $\sqrt{169}$ ; 25  
d)  $\sqrt{2}$ ;  $\sqrt[3]{5}$ ;  $\sqrt{10}$

## QUESTION 2.

- a) -112  
b)  $-6 + 2 = -4$   
c)  $-16 - (-14) = -16 + 14 = -2$   
d)  $144 - 10 = 134$   
e)  $10 + 8 = 18$   
f)  $\frac{1}{2} \times \frac{2}{3} \times \frac{3}{1} = 1$   
g)  $[24 \div (-4)] \times 3 + 7 = [-6] \times 3 + 7 = -18 + 7 = -11$

## QUESTION 3.

- a) 1; 2; 3; 6; 9; 18; 27; 54  
b) 54; 108; 162; 216  
c)  $2 \times 3^3$   
d) 1; 4; 9; 16; 25; 36; 49

## QUESTION 4.

- a)  $-1\frac{1}{2}$ ; -1; 0; 2;  $2\frac{1}{2}$   
b) -505; -155; -55; -4; 5; 55

## QUESTION 5.

- 5.1 a)  $\frac{123}{10}$ ,      b)  $\frac{214}{1000} = \frac{107}{500}$       c)  $-\frac{250\,005}{1000} = -\frac{50\,001}{200}$   
5.2 a) 0,5      b) 2,25      c) -3,375

## QUESTION 6.

- a)  $5,48 \times 10^7$   
b)  $8,86 \times 10^2$   
c)  $8,0 \times 10^5$   
d)  $7,56309 \times 10^{-2}$

## QUESTION 7.

- a) 30 000  
b) 2 336 000  
c) 0,000 956 3

# WORKSHEET 2 – MEMORANDUM

## QUESTION 1.

- a)  $\sqrt{16}$ ; 25  
b)  $\sqrt{16}$ ;  $\sqrt[3]{-125}$ ; 25  
c)  $\sqrt{16}$ ; 0,6; -6,783;  $5\frac{1}{4}$ ;  $\sqrt[3]{-125}$ ; 25  
d)  $\sqrt[3]{25}$ ;  $\sqrt[3]{-100}$ ;  $\sqrt{17}$

**QUESTION 2.**

- a)  $-64 + 25 + 64 = 25$   
 b)  $\{[-15 + 1] \times 3\} \div 6 = \{-14 \times 3\} \div 6 = -7$   
 c)  $-4 + 8 = 4$   
 d)  $\frac{16}{5} \times \frac{15}{8} = 6$   
 e)  $\frac{23}{8} + \frac{5}{2} \times \frac{7}{10} = \frac{23}{8} + \frac{7}{4} = \frac{23+14}{8} = \frac{37}{8}$   
 f)  $\frac{1}{2} \left( \frac{23}{4} + \frac{18}{8} \right) = \frac{1}{2} \left( \frac{64}{8} \right) = 4$   
 g)  $\frac{39}{2} \div \frac{13}{10} = \frac{39}{2} \times \frac{10}{13} = 15$

**QUESTION 3.**

- a) 2; 3; 5; 7; 11; 13; 17; 19; 23; 29; 31;  
 b)  $2^2 \times 3^2$   
 c) 2; 4; 6; 12; 18; 36;  
 d) 4; 6; 8; 9; 10;

**QUESTION 4.**

- a) 1,625  
 b) 123%  
 c)  $\frac{345}{100} = \frac{69}{20}$

**QUESTION 5.**

- a)  $2,45 \times 10^5$   
 b)  $3,0 \times 10^{-5}$   
 c)  $1,457 \times 10^9$   
 d)  $6,7 \times 10^{-11}$   
 e)  $7,5 \times 10^9$   
 f)  $6,93 \times 10^4$

**QUESTION 6.**

- a)  $2,1 \times 10^3$   
 b)  $6 \times 10^{-4}$

**WORKSHEET 3 – MEMORANDUM****QUESTION 1.**

- a)  $16 \times \frac{5}{2} = 40$   
 b)  $78 \times \frac{2}{3} = 52$   
 c)  $2 : \frac{5}{2} : \frac{9}{2} \quad \frac{4}{18} \times 1800 = 400$   
 $\frac{4}{2} : \frac{5}{2} : \frac{9}{2} \quad \frac{5}{18} \times 1800 = 500$   
 $4 : 5 : 9 \quad \frac{9}{18} \times 1800 = 900$   
 400 : 500 : 900

**QUESTION 2.**

$$\frac{16\,460}{25\,000} \times \frac{100}{1} = 65,84 = 66\%$$

**VRAAG 3.**

- a)  $\frac{24}{60} = \frac{4}{10} = 0,4 \text{ hour}$   
 b)  $\text{speed} = \frac{\text{distance}}{\text{time}} = \frac{3,5}{0,4} = 8,75 \text{ km/hour}$   
 c)  $8,75 + 5 = 13,75 \text{ km/hour}$   
 d)  $\text{time} = \frac{\text{distance}}{\text{speed}} = \frac{3,5}{13,75} = 0,25 \text{ hour} = 15 \text{ minutes}$

#### QUESTION 4.

- a) Balance = 15 000 – 2000 = R 13 000  
Interest =  $P \times i \times t = 13000 \times \frac{13,5}{100} \times 4 = R 7 020$
- b) Total Amount = 15 000 + 7 020 = R 22 020
- c) Instalment =  $\frac{13\,000+7\,020}{48} = R 417,08$

## WORKSHEET 4 – MEMORANDUM

#### QUESTION 1.

$$5 \times 5,02 \times 10^{23} = 25,1 \times 10^{23} = 2,51 \times 10^{24} \text{ molecules}$$

#### QUESTION 2.

- a) i)  $\frac{18}{20} = \frac{9}{10} = 0,9$       ii)  $\frac{154}{132} = \frac{7}{6}$
- b)  $72 \times \frac{5}{3} = 120$
- c)  $117 \times \frac{10}{13} = 90$
- d)  $3 + 5 + 7 = 15$   
 $\frac{3}{15} \times 210 = 42$   
 $\frac{5}{15} \times 210 = 70$   
 $\frac{7}{15} \times 210 = 98$        $\therefore 42 : 70 : 98$
- e) Speed =  $\frac{\text{distance}}{\text{time}} = \frac{40 \text{ km}}{24 \text{ min}} = \frac{5 \text{ km}}{3 \text{ minute}}$   
Distance = speed  $\times$  time =  $\frac{5}{3} \times 78 \text{ minutes} = 130 \text{ km}$
- f) speed =  $\frac{\text{distance}}{\text{time}} = \frac{400 \text{ meter}}{49,32 \text{ sekondes}} = 8,11 \frac{m}{s}$

#### QUESTION 3.

$$12\frac{3}{4} - 3\frac{2}{5} = \frac{51}{4} - \frac{17}{5} = \frac{255-68}{20} = \frac{187}{20} = 9,35 \text{ km}$$

#### QUESTION 4.

- a) Final amount =  $P \times i \times n = 5800 \times \frac{8,25}{100} \times 4 = R 1 914$
- b)  $P \times i \times n = A$   
 $3000 \times 0,07 \times n = 4 620$   
 $n = \frac{4620}{3000 \times 0,07} = 22 \text{ years}$
- c)  $A = P(1 + i)^n$   
Final Amount =  $A = 5000(1 + 0,07)^5 = R 7 012,76$   
Interest =  $A - P = 7 012,76 - 5 000 = R 2 012,76$

#### QUESTION 5.

- a)  $6 - 4\frac{3}{4} = \frac{24}{4} - \frac{19}{4} = \frac{5}{4}$  is left over  
 $\frac{5}{4} \times \frac{60}{100} = \frac{3}{4}$  of a pizza
- b)  $\frac{3}{4} = 0,75$  of a pizza

#### QUESTION 6.

Tourist have  $\pounds 1806 \times 11,50 = R 20769$   
Expenses =  $(7 \times 120) + 600 + 20 000 = R 21 440$   
Tourist don't have enough money



