

ECOLE DES SCIENCES DE MUSANZE

REVISION QUESTIONS OF MATHEMATICS FOR S1

Q1. Simplify a) $1\frac{1}{4} + 2\frac{1}{2} - 1\frac{3}{4}$

b) $2\frac{1}{2} \times 3\frac{2}{3} \div 1\frac{5}{8}$

c) $\frac{3 \times 10^{-13} \times (6 \times 10^5)^2}{80}$ (give your answer in standard form)

d) If $\frac{4^x \times 2^y}{2^{x+2y}} = 2^p$, express p in terms of x and y

Q2. Use the distributive property to evaluate without using a calculator

a) $52 \times 3 + 52 \times 2 + 52 \times 5$

b) $5.7 \times 0.4 + 5.7 \times 0.6$

Q3. Evaluate $E = -x(y - 8)^2$ for $x = -2$ and $y = 5$

Q4. Substitute each letter with a digit to make the equality true

a) $7A3 + B6C = 1191$

c) $3D5 - 18E = F09$

Q5. If $a = 14$, $b = 8$ and $\frac{a}{c} + \frac{a-1}{2c} = b$, find the value of c

Q6. A watering can holds 2.54 litres of water. How many such cans could be filled from a tank that holds 100 litres? How much water would be left over if the tank leaks 0.08 litres of water once filled?

Q7. Find the lowest common multiple (LCM) and the highest common factor (HCF) of 54 and 84.

Q8. Explain the following terms:

a) Empty set

b) Finite set

c) Cardinal number of a set.

Q9. Copy and complete the following statements:

a) The elements which do not belong to a set A are all the elements of theof A

- b) In a diagram showing sets, the rectangle represents the

- c) The elements which belong both to set A and to set B are elements of
of sets A and B
- d) When all the elements of set C are also elements of set D ,we say that
 C.....D

Q10.List the members of the following sets. How many members are in each set?

- (a) The set of {colours of a rainbow}.
- (b) The set of {colours of the Rwandan flag}.
- (c) The set of {countries neighbouring Rwanda}

Q11.a) If there are 128 subsets in a set, how many elements does the set contain?

b) Suppose a set has $4(n-3)$ subsets. How many elements are in this set? (n is the number of elements in a set).

Q12.Given sets $A = \{2, 4, 6, 8, 10, 12\}$, $B = \{3, 6, 9, 12, 15\}$ and $C = \{9, 10, 11, 12, 13, 14, 15, 16, 17\}$, draw Venn diagrams to represent the following sets: (a) $A \cap B$
 (b) $A \cap C$ (c) $B \cap C$ (d) $A \cap B \cap C$

Q13. Given the sets $P = \{1, 2, 3, 4, 5, 6\}$ and $Q = \{2, 4, 7, 8\}$,

find: (a) $P - Q$ (b) $Q - P$ (c) $Q \Delta P$

Q14.A survey was done on 150 Rwandese about which newspapers they read. 83 read the New Times, 58 read the Monitor, 36 read neither of those two papers. How many people read both newspapers?

Q15. A survey was carried out on 50 people about the hotels they like for taking lunch from among Hilltop, Serena and Lemigo. It was found out that, 15 people ate at Hilltop, 30 people ate at Serena, 19 people ate at Lemigo, 8 people ate at Hilltop and Serena, 12 people ate at Hilltop and Lemigo, 7 people ate at Serena and Lemigo. 5 people ate at Hilltop, Serena and Lemigo.

- (a) Represent the information on a Venn diagram.
- (b) How many people ate at Hilltop only?
- (c) How many ate at Hilltop and Serena but not at Lemigo?

(d) How many people did not eat from any of these three hotels?

Q16. Draw a papygram to show the relation 'is a factor of' for $\{2, 3, 4, 6, 7, 8\}$.

Q17. A set A maps onto set B by the operation "multiply by 3 and add 1". The elements of set A are $\{5, 6, 7, 8, 9\}$

(a) List the element of set B.

(b) Map set A onto B.

(c) What type of mapping is this?

Q18. The marks obtained in a test by Carine, Bernice, Delice, Sandrine and Sifa were 5, 4, 7, 5, 9 and 7 respectively. Illustrate the mapping of marks to students. What type of mapping is this?

Q19. If $f(x) = 2 - \frac{1}{2}x$ has the domain $\{-2, 0, 2, 4, 6\}$, find the range.

Q20. If $f(x) = 3x$ and $g(x) = x^2 + 3$, find the value of x for which, $gf(x) = fg(x)$.