

# WANYANGE GIRLS SECONDARY SCHOOL

## S. 2 MATHEMATICS

**TIME: 1 hour.**

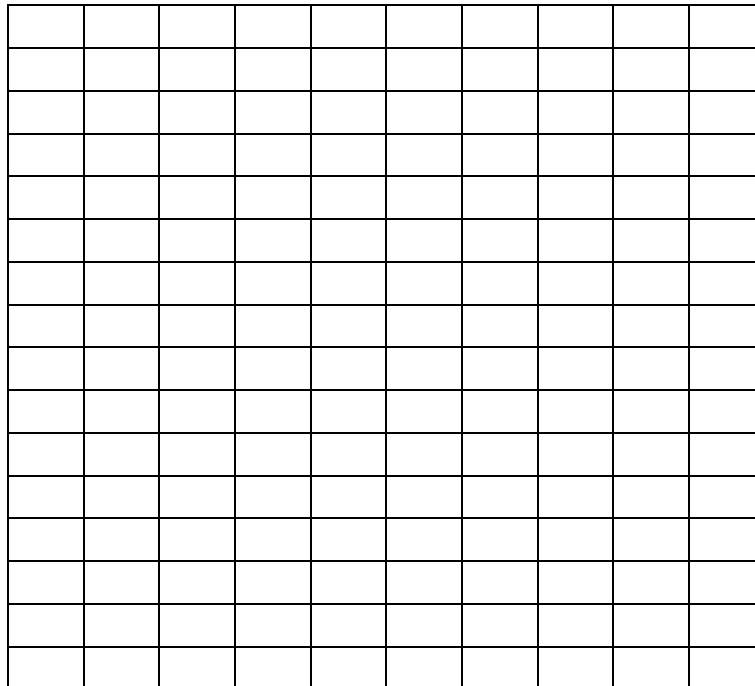
**Instructions:**

Attempt all questions.

1. Given that  $\mathbf{a} = \begin{pmatrix} 2 \\ 3 \end{pmatrix}$ ,  $\mathbf{b} = \begin{pmatrix} 5 \\ 3 \end{pmatrix}$ ,  $\mathbf{c} = \begin{pmatrix} 7 \\ 2 \end{pmatrix}$ ,  $\mathbf{d} = \begin{pmatrix} -6 \\ -3 \end{pmatrix}$ , find the following;

- (i)  $\mathbf{a} + \mathbf{b}$       (ii)  $\mathbf{a} + \mathbf{c}$       (iii)  $\mathbf{b} + \mathbf{d}$       (iv)  $\mathbf{a} - \mathbf{c}$       (v)  $\mathbf{d} - \mathbf{b}$

2.



Write down the vectors represented on the diagram above by arrows

3. On a squared paper, draw and show the arrow diagrams to represent the vectors below;

- (i)  $\mathbf{p} = \begin{pmatrix} -3 \\ -5 \end{pmatrix}$       (ii)  $\mathbf{q} = \begin{pmatrix} -1 \\ 3 \end{pmatrix}$       (iii)  $\mathbf{r} = \begin{pmatrix} -2 \\ 6 \end{pmatrix}$       (iv)  $\mathbf{s} = \begin{pmatrix} -4 \\ 1 \end{pmatrix}$

**END**

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### **Instructions:**

Attempt all questions.

1. a) Using a step by step method, find the amount after 2years when shs. 400,000 is invested at a compound interest rate of 10%  
b) Calculate total interest.
2. Mary gets  $3\frac{1}{2}\%$  commission for the first shs. 500,00 of goods she sells and 4% for the rest. What commission does she earn when her sales amount to shs. 750,000.
3. Goods costing shs. 4,000,000 were sold at a gross profit of 30%. If the net profit was shs. 770,000, find the operating costs.
4. A box of mineral water is priced at shs. 28,000. A retailer buys a box at a discount of 15% and then sells it at shs. 42,000. Find the retailer's percentage profit.
5. After a 35% discount, a customer paid shs.3,500,000 cash for a second hand car. What was the marked price for the car?

**END**

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### **Instructions:**

Attempt all questions.

1. Jane allows a customer a cash discount of 20% on the a dozen of books marked at shs. 36,000 each dozen.  
Find how much does the customer pay per dozen?
2. A box of mineral water is priced at shs. 28,000. A retailer buys a box at a discount of 15% and then sells it at shs. 42,000. Find the retailer's percentage profit.
3. After a 35% discount, a customer paid shs.3,500,000 cash for a second hand car. What was the marked price for the car?
4. a bag of cement is sold for shs. 40,000 making a profit of 25%. Find the cost price.
5. A computer is sold for shs. 3,600,000 at a loss of 10%. What was the cost price?

**END**



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### **Instructions:**

Attempt all questions.

1. If  $17_{\text{ten}} = 32_x$ , find base  $x$ .
2. Given the set  $B = \{3, 2, 4\}$ 
  - (i) List down all the subsets of  $B$ .
  - (ii) Hence find the number of subsets in  $B$ .
3. Given that  $A = mx^2 + c$ , find  $A$  if  $m = 3$ ,  $x = 2$  and  $C = -7$ .
4. Evaluate:  $\frac{1}{2} + \frac{1}{3} - \frac{1}{4} \times \frac{4}{6}$ .
5. Express the following as a product of their prime factors:
  - (i) 30
  - (ii) 420
6. Solve for  $x$  in the equation:  $3x - 4(3 - x) + 19 = 0$ .
7. Arrange the following in descending order:  $-5, 3, -1, 0, -6, 7$ .
8.
  - (i) Express  $0.75$  as a fraction in its simplest form.
  - (ii) Express  $\frac{1}{3}$  as a decimal fraction.
9. Evaluate:  $4.02 - 2.1 + 32.69$ .

**END**

**WANYANGE GIRLS SECONDARY SCHOOL**

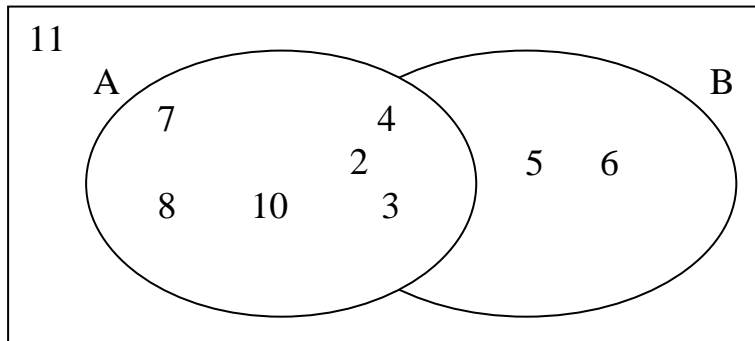
## S. 2 MATHEMATICS

TIME: 1 hour.

### Instructions:

Attempt all questions.

1. Using the Venn diagram below list down the elements of the given sets.



- (i)  $(A \cup B)$       (ii)  $(A \cap B)$       (iii)  $(A \cap B)^1$       (iv)  $(A^1 \cap B)^1$ .
2. a) List down the first five triangular numbers.  
b) List down the first prime numbers.  
c) Find the HCF and LCM of 15 and 18.
3. Find the next three numbers in the following sequences:  
(i) 1, 5, 9, 13, ....., ....., .....      (ii) 1, 4, 9, 16, ....., ....., .....  
(iii) 21, 18, 15, 12, ....., ....., .....      (iv) 32, 16, 8, 4, ....., ....., .....
4. On the same squared paper draw the lines  $x + y =$  and hence find the coordinates of the point of intersection.
5. a) Convert the recurring decimal  $(2.1\overline{23})$  to a fraction.  
b) Solve for x in:  $\frac{1}{2}x + 5 = \frac{1}{4}x - 27$ .  
c) 5 less than twice x is 15, find x.
6. Construct a triangle ABC where AB is 10cm angle  $ABC = 60^\circ$  and  $CAB = 45^\circ$ . Measure and state the lengths CA, BC and angle ACB.
7. a) Mary went to the super market with shillings 66,000/= and bought the following items: 5kgs of sugar at 2400/= per kg, 2 loaves of bread each at 2,500/= and ten apples at each 1,500/=.  
(i) Find Mary's total expenditure.  
(ii) How much money did she remain with?  
b) A shoe shop offers a 5% discount on cash payments. Mike pays cash for a pair of shoes whose market price is Shs. 80,000/=;  
(i) How much discount was he allowed?  
(ii) Hence find how much he paid in cash for the pair of shoes.

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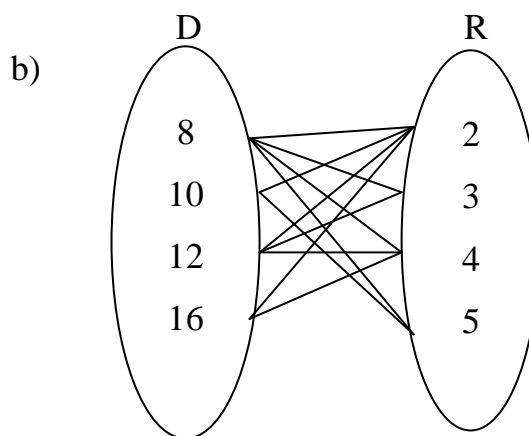
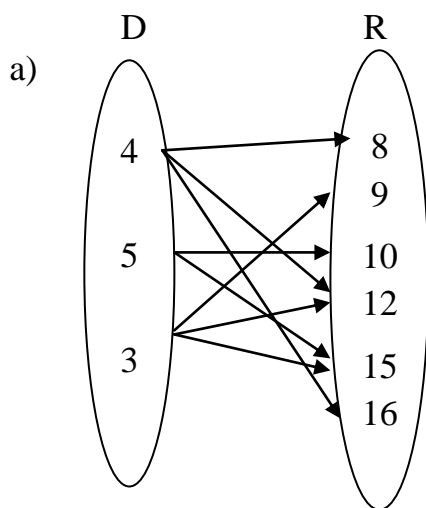
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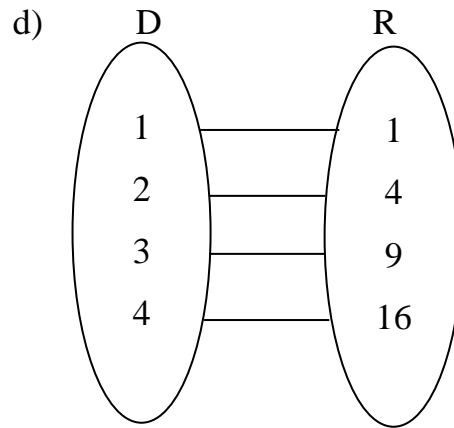
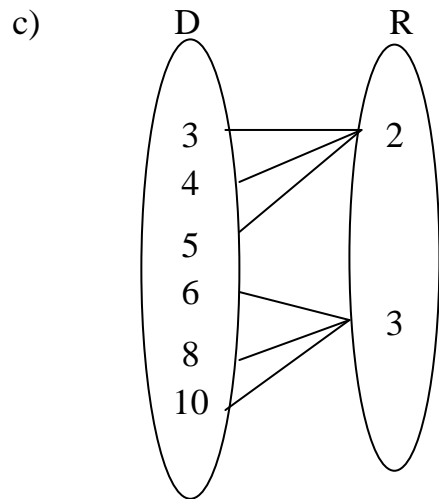
Attempt all questions.

1. The following table shows 5 students of a certain school and their ages.  
Use the information to draw a papy gram showing the relation “Is younger than”

STUDENTS	AGE(YEARS)
Jane	23
Mary	19
Jesca	24
Anne	20
Ritah	15

2. Draw mapping diagrams for each of the following sets of ordered pairs of numbers;
- a)  $\{(7,9), (8, 12), (9, 15), (10, 18), (11, 21)\}$
- b)  $\{(4, 4), (4, 8), (4, 16), (6, 6), (6, 18), (6, 54)\}$
3. Copy and state the type of mapping in each.





4. Use the rule multiply by 3 then subtract 5 to find the range for the domain:  
 {3, 7, 12, -2}

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**TIME: 1 hour.**

### **Instructions:**

Attempt all questions.

1. Express  $0.\dot{3}\dot{7}$  as a fraction.
2. Show the following inequalities on number lines:
  - (i)  $-1 < x \leq 4$
  - (ii)  $x < 6$
3. Given that  $\xi = \{\text{the first 12 natural numbers}\}$   
 $M = \{\text{multiples of four less than 14}\}$   
 $F = \{\text{factors of 48 less than 13}\}$ 
  - (a) Draw a Venn-diagram to represent the above information.
  - (b) Use your diagram in 8(a) above to list the members of the following sets.
    - (i)  $(M \cup F)^c$
    - (ii)  $M^c \cap F$
4. A bus is to travel from town A, to Town B and to Town C in that order. Town C is 100km away from Town A. The bus leaves Town A at 7.00am for Town B, which is 60km away and travels at an average speed of 60km/h. It stops over at Town B due to the poor state of the road for an hour and then later it continues and reaches Town C at 1.00 pm.
  - a) Draw the distance – time graph to show the journey of the bus. (Use a scale of 2cm to represent 10km and 2cm to represent 1hr).
  - b) Using your graph find;
    - (i) How far is Town C from Town B?
    - (ii) The speed at which the bus travelled from Town B to Town C and for how long?
    - (iii) The average speed of the bus for the whole journey.
5. a) On the same axes, show by shading the unwanted regions of the following inequalities;
$$x < 6$$
$$y < 8$$
$$4x + 3y \geq 24$$
  - (b) Find the area of the unshaded region.

**END**