

SENIOR ONE
MID- TERM TWO EXAMS 2013
MATHEMATICS
TIME: 2½ HOURS

INSTRUCTIONS:

Attempt **all** questions.

All necessary calculations must be shown and should be done on the same page as the rest of the answer.

SECTION A(40 MARKS)

1. Given that $24k_3 = 553_8$, find the value of k.

2. If $3\frac{1}{2} = \frac{9}{b}$, find the value of b.

3. A cake takes two – third of an hour to get ready. If it was put in an oven at 7.45am, at what time did it get ready?

4. A man makes 50 steps, each of 60cm, every minute. How many minutes does he take to walk 1.2km?

5. Simplify: $\frac{\frac{2}{5} + 2\frac{1}{8}}{1\frac{7}{8} - \frac{3}{4}}$.

6. Given that $n(A) = 16$, $n(B) = 18$, $n(A \cup B) = 25$ calculate $n(A \cap B)$.

7. Two bells toll at intervals of 30 and 45 minutes respectively, if tolled together at a certain time after how long will they do so again.

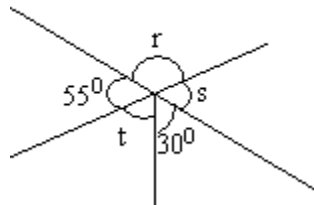
8. A circle has a circumference of 28m. Calculate the area of the circle.(Take π as $\frac{22}{7}$)

9. Berna bought bananas for sh. 16,000 and sold them at sh.16,960. What was her percentage profit?

10. In a mixed school of 640 students $\frac{1}{4}$ are girls, of these girls $\frac{3}{4}$ study commerce. Calculate the number of students who study commerce.

SECTION B(60 MARKS)

11. A senior five arts class has 150 students. Of these 6 study history (H), economics (E) and geography (G), 8 study H and E, 26 study E and G, 12 study G and H, 27 study geography only and 45 study history only. 3 students do not study any of these three subjects.
- (a) Represent this information on a Venn diagram.
- (b) From it determine the number of students who study:
- economics only
 - each one of these subject
 - at most one of these subjects.
12. Using a ruler, pencil and a pair of compasses only, construct a triangle in which $BC = 8\text{cm}$ angle $ABC = 75^\circ$ and angle $ACB = 45^\circ$. Construct the circumcircle of the triangle and measure:
- (a) the radius of the circle
- (b) the length of AB and AC.
13. A plane flew from airstrip P due North for 350km to airstrip Q. From Q, it then flew on a bearing of 295° for 250km to airstrip R. From there, it flew on a bearing of 090° for 500km to airstrip S.
- (a) Draw a sketch diagram to show the route of the plane. Hence draw an accurate diagram using the scale 1cm to represent 50km.
- (b) From your diagram, find the distance and bearing of airstrip Q from S.
- (c) If the plane flew from S back to airstrip P directly at an average speed of 200km/hr, find the time taken for this journey.
- 14(a) Calculate the values of the angles marked r, s and t.



- (b) At a leavers' party, there were 10 more girls than boys. Each boy paid sh. 2,000 and each girl paid sh. 1,500. The total amount of money collected was sh. 85,000. Find the number of boys and girls who were there at the party.
- 15(a) The perimeter of a rectangle is 56cm. If its length is 2cm less than twice its width, find its length and width.
- (b) I think of a number x, add 5 to it and multiply the result by 4. The result is 48. Find the number x.

(c) Solve for t in the equation: $(t + 1) - 3(t + 3) = 15$.

THE END