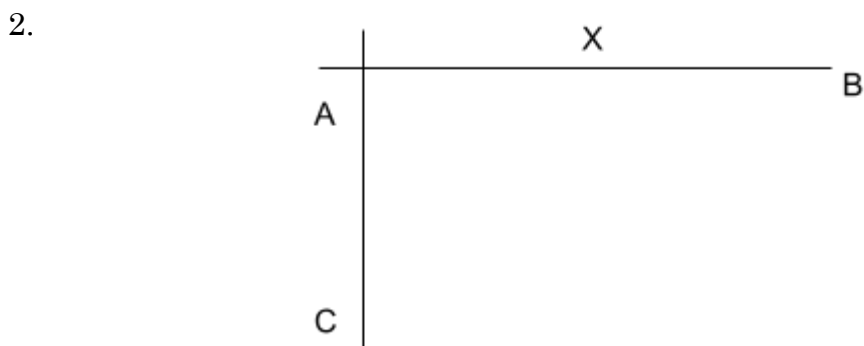


1. Geometrical Constructions

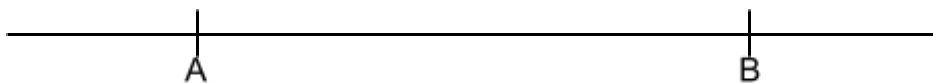
1. Using a ruler and a pair of compasses only,
 - a) Construct a triangle ABC in which $AB = 9\text{cm}$, $AC = 6\text{cm}$ and angle $BAC = 37\frac{1}{2}^\circ$
 - a) Drop a perpendicular from C to meet AB at D. Measure CD and hence find the area of the triangle ABC
 - b) Point E divides BC in the ratio 2:3. Using a ruler and Set Square only, determine point E. Measure AE.



On the diagram, construct a circle to touch line AB at X and passes through the point C.
(3 mks)

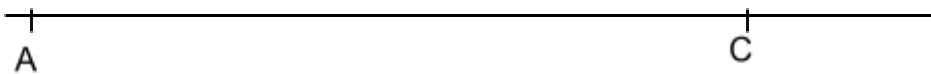
3. Using ruler and pair of compasses only for constructions in this question.
 - (a) Construct triangle ABC such that $AB=AC=5.4\text{cm}$ and angle $ABC=30^\circ$. Measure BC
(4 mks)
 - (b) On the diagram above, a point P is always on the same side of BC as A. Draw the locus of P such that angle BAC is twice angle BPC
(2 mks)
 - (c) Drop a perpendicular from A to meet BC at D. Measure AD
(2 mks)
 - (d) Determine the locus Q on the same side of BC as A such that the area of triangle $BQC = 9.4\text{cm}^2$
(2 mks)
4. (a) Without using a protractor or set square, construct a triangle ABC in which $AB = 4\text{cm}$, $BC = 6\text{cm}$ and $\angle ABC = 67\frac{1}{2}^\circ$. Take AB as the base.
(3mks)
Measure AC.
 - (b) Draw a triangle $A^1B^1C^1$ which is indirectly congruent to triangle ABC.
(3mks)
 - (c) Taking the mid point of AB as your centre of rotation (M). Find the triangle $A^{11}B^{11}C^{11}$ the image of $A^1B^1C^1$ after -90° .
(4mks)
5. Construct triangle ABC in which $AB = 4.4\text{ cm}$, $BC = 6.4\text{ cm}$ and $AC = 7.4\text{ cm}$. Construct an escribed circle opposite angle ACB
(5 mks)
 - (a) Measure the radius of the circle
(1 mk)

- (b) Measure the acute angle subtended at the centre of the circle by AB (1 mk)
- (c) A point P moves such that it is always outside the circle but within triangle AOB, where O is the centre of the escribed circle. Show by shading the region within which P lies. (3 mks)
6. (a) Using a ruler and a pair of compasses only, construct a parallelogram PQRS in which $PQ = 8\text{cm}$, $QR = 6\text{cm}$ and $\angle PQR = 150^\circ$ (3 mks)
- (b) Drop a perpendicular from S to meet PQ at B. Measure SB and hence calculate the area of the parallelogram. (5 mks)
- (c) Mark a point A on BS produced such that the area of triangle APQ is equal to three quarters the area of the parallelogram (1 mk)
- (d) Determine the height of the triangle. (1 mk)
7. Using a ruler and a pair of compasses only, construct triangle ABC in which $AB = 6\text{cm}$, $BC = 8\text{cm}$ and angle $ABC = 45^\circ$. Drop a perpendicular from A to BC at M. Measure AM and AC (4mks)
8. a) Using a ruler and a pair of compasses only to construct a trapezium ABCD such that $AB = 12\text{cm}$, $\angle DAB = 60^\circ$, $\angle ABC = 75^\circ$ and $AD = 7\text{cm}$ (5mks)
- b) From the point D drop a perpendicular to the line AB to meet the line at E. measure DE hence calculate the area of the trapezium (5mks)
9. Using a pair of compasses and ruler only;
- (a) Construct triangle ABC such that $AB = 8\text{cm}$, $BC = 6\text{cm}$ and angle $ABC = 30^\circ$. (3 marks)
- (b) Measure the length of AC (1 mark)
- (c) Draw a circle that touches the vertices A,B and C. (2 marks)
- (d) Measure the radius of the circle (1 mark)
- (e) Hence or otherwise, calculate the area of the circle outside the triangle. (3 marks)
10. Using a ruler and a pair of compasses only, construct the locus of a point P such that angle $APB = 60^\circ$ on the line $AB = 5\text{cm}$. (4mks)



11. Using a set square, ruler and pair of compasses divide the given line into 5 equal portions. (3mks)

12. Using a ruler and a pair of compasses only, draw a parallelogram ABCD, such that angle DAB = 75° . Length AB = 6.0cm and BC = 4.0cm from point D, drop a perpendicular to meet line AB at N
- Measure length DN
 - Find the area of the parallelogram (10 mks)
13. Chebochok deposited shs.120,000 in a financial institution which offered a compound interest at 8% p.a, compounded quarterly for 9 months. Find the accumulated amount by the end of the period
14. Using a ruler and a pair of compasses only, draw a parallelogram ABCD in which AB = 6cm, BC = 4cm and angle BAD = 60° . By construction, determine the perpendicular distance between the lines AB and CD
15. Without using a protractor, draw a triangle ABC where $\angle CAB = 30^\circ$, AC = 3.5cm and AB = 6cm. measure BC
16. (a) Using a ruler and a pair of compass only, construct a triangle ABC in which angle ABC = 37.5° , BC = 7cm and BA = 14cm
- Drop a perpendicular from A to BC produced and measure its height
 - Use your height in (b) to find the area of the triangle ABC
 - Use construction to find the radius of an inscribed circle of triangle ABC
17. In this question use a pair of compasses and a ruler only
- Construct triangle PQR such that PQ = 6 cm, QR = 8 cm and $\angle PQR = 135^\circ$
 - Construct the height of triangle PQR in (a) above, taking QR as the base
18. On the line AC shown below, point B lies above the line such that $\angle BAC = 52.5^\circ$ and] AB = 4.2cm. (*Use a ruler and a pair of compasses for this question*)



- Construct $\angle BAC$ and mark point B
 - Drop a perpendicular from B to meet the line AC at point F . Measure BF
19. Juma paid shs.450 for a trouser after getting a discount of 10%. The trader still made a profit of 25% on the sale. What profit would the trader have made if no discount was allowed?