SUREKEY EXAMINATIONS BOARD

PRE-PLE TARGET, SERIES

2022

MATHEMATICS MARKING GUIDE

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"Don't speak for Quality, Let the Quality Speak for itself"

SECTION A: 40 MARKS

1. Workout: 123 + 321.

$$\begin{array}{r} 1\,2\,3 \\ +\,3\,2\,1 \\ \hline 4\,4\,4 \end{array}$$

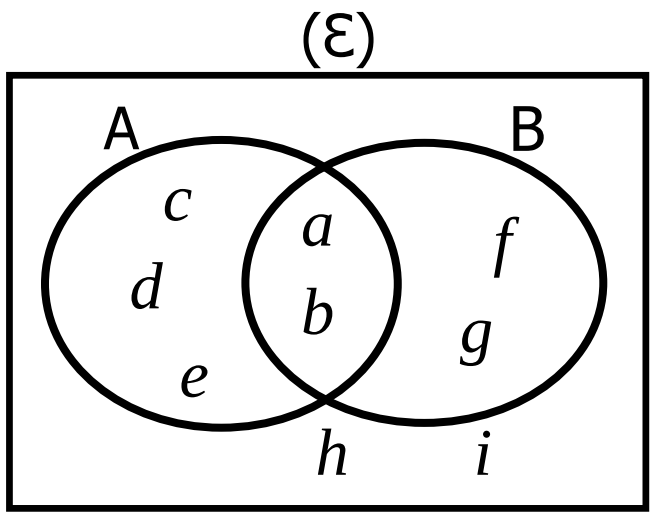
2. Round off 54321 to the nearest ten thousands.

$$\begin{array}{r} \overset{Tth}{5}\,\overset{TH}{4}\,\overset{H}{3}\,\overset{T}{2}\,\overset{O}{1} \\ +\,0\quad\;\; . \\ \hline 5\,0\,0\,0\,0 \end{array}$$

3. Work out: $\frac{3}{4} \div \frac{1}{2}$

$$\frac{3}{4} \div \frac{1}{2} \;\Big\|\; \frac{3 \times 1}{2 \times 1}$$
$$\frac{3}{4_2} \times \frac{\cancel{2}^{1}}{1} \;\Big\|\; \frac{3}{2}$$
$$= 1\tfrac{1}{2}$$

4. Use the Venn diagram below to answer the questions that follow.



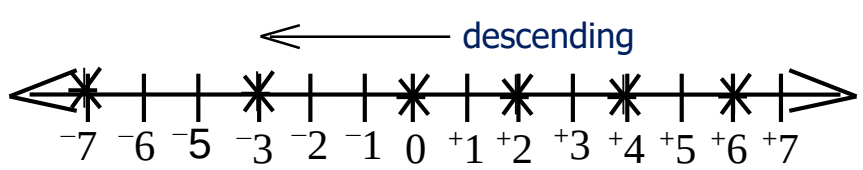
Find n(AnB)′

$(AnB)' = \{c, d, e, f, g, h, i\}$

$n(AnB)' = 7$

5. Arrange the following integers in descending order.

$^{-}7, {}^{+}4, 0, {}^{-}3, {}^{+}2, {}^{+}6$

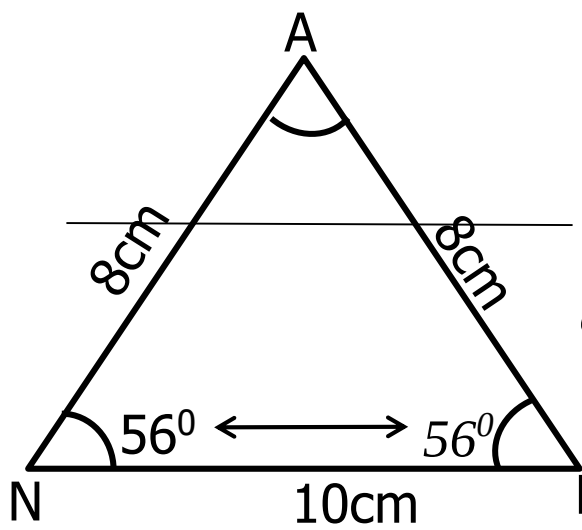


descending order

$\{{}^{+}6, {}^{+}4, {}^{+}2, 0, {}^{-}3, {}^{-}7\}$

2

6. Find the size of angle **NAM** in degrees.



An isosceles triangle (base angles are equal.

$<NAM = 180^0 - (56^0 + 56^0)$

$= 180^0 - (112^0)$

$<NAM = \quad 68^0$

7. How many $\frac{1}{4}$ litre bottles of sanitizer can be filled in a 5 litre jerrycan that is placed outside your examination room?

$5l \div \frac{1l}{4}$

$5\cancel{l} \times \frac{4}{1\cancel{l}}$

5×4

$= 20$ bottles

8. In a class, there are 20% more boys than girls. If the class has 30 boys, how many pupils are in the class?

Let the %ge for girls be x

Girls	Boys	Tot %
x	$+ (x + 20\%)$	$= 100\%$
$2x$	$+ 20\% - 20\%$	$= 100\% - 20\%$
	$2x$	$= 80\%$
	$\frac{2x}{2}$	$= \frac{80\%}{2}$
	x	$= 40\%$

%ge for boys

$(x + 20\%)$

$40\% + 20\%$

$= 60\%$

Total number of pupils

$30 \div \frac{60}{100}$

$\cancel{3}^{1}0 \times \frac{10^{5}\cancel{0}}{\cancel{6}_{31}\cancel{0}}$

10×5

$= 50$ pupils

9. The area of a square garden is 1600 square metres. Calculate its periemeter.

$S \times S = Area$

$S^2 = 1600m^2$

$\sqrt{S^2} = \sqrt{1600}m^2$

$S = 40m$

Each side is 40m

$P = 4$ sides

$P = 4 \times 40m$

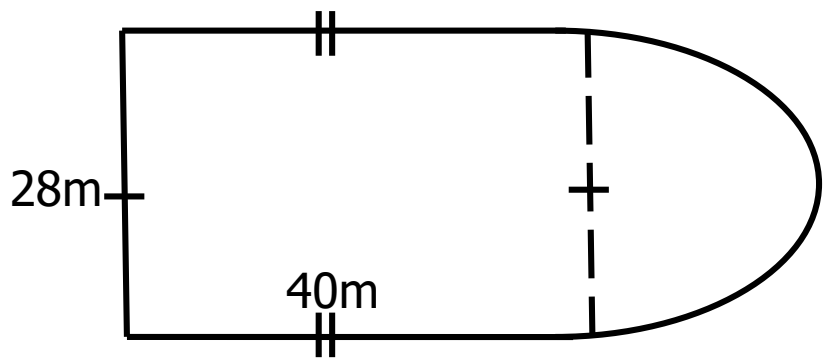
$P = 160m$

10. Given that a = bc, b = 2 and c = ⁻3. Evaluate $b(a^2 - c)$.

$b(a^2 - c)$.
$b\ ((bxc)^2 - c)$
$2\ ((2 \times \bar{3})^2 - \bar{3})$
$2\ (\bar{6}^2 - \bar{3})$
$2\ (\bar{6}^2 - (\bar{3}))$
$2\ ((\bar{6} \times \bar{6}) + 3)$

$2\ (36 + 3)$
2×39
$= 78$

11. Calculate the perimeter of the figure below. (Use π as $\frac{22}{7}$)



$P = S + S + S + \frac{1}{2}\pi D$

$P = (40 + 28 + 40 + \frac{1}{\cancel{2}_1} \times \frac{\overset{11}{\cancel{22}}}{\cancel{7}_1} \times \overset{4}{\cancel{28}})m$

$P = (108 + 44)m$

$P = 152m$

12. At our school, there is a period of 2½ hours that is given to baby class pupils to rest. If that period ends at exactly 1:00p.m, at what time does it begin?

First convert the E.T to 24-hr

Hrs	Min
1	00
+12	00
13	00hr

S.T = E.T – Duration

Hrs	Min
$\overset{12}{\cancel{13}}$	$\overset{60}{00}$
- 2	30
10	30a.m

The period begins at 10:30a.m

13. If $\frac{3}{4}$ kg of sugar cost Shs.3,150. Find the cost of $3\frac{1}{2}$ kg.

$\frac{3}{4} kg\ \ costs\ Shs.\ 3{,}150$

$1kg$ will cost Shs. $3{,}150 \div \frac{3}{4}$

$shs.\ \overset{1050}{\cancel{3{,}150}} \times \frac{4}{\cancel{3}_1}$

Shs 1050 x 4
Shs.4200

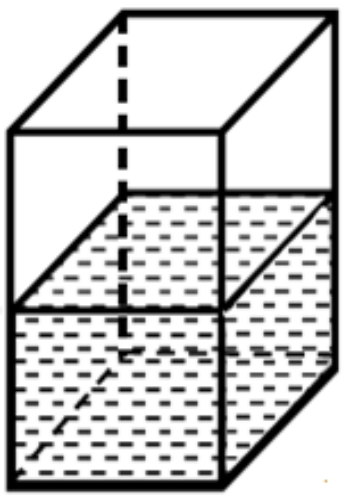
$3\frac{1}{2} kg\ \ costs\ Shs.\ 4200 \times 3\frac{1}{2}$

$\frac{7}{2} kg$ will cost Shs. $\overset{2100}{\cancel{4200}} \times \frac{7}{\cancel{2}_1}$

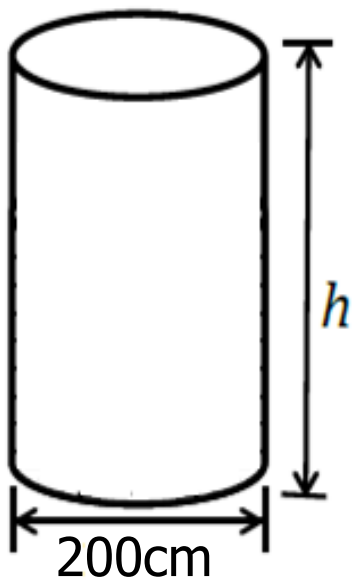
Shs 2100 x 7
Shs.14,700

14. The volume of the water in tank **A** is 12560000cm^3. The water in the tank was poured in tank **B** and it became completely full. Find the height of tank **B**. (Use π as 3.14)

Tank **A**



Tank **B**



Volume B = Volume A

$\pi r^2 h = 12560000\text{cm}^3$

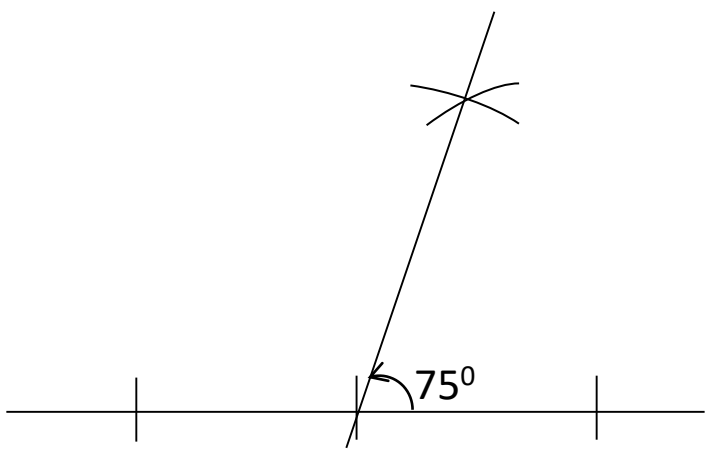
$\frac{314}{100} \times 100 \times 100 \times h = 12560000\text{cm}^3$

$31400h = 12560000\text{cm}^3$

$\frac{31400^1 h}{31400_1} = \frac{12560000^4}{314_1 00}\text{cm}^3$

$h = 400\text{cm}$

15. Using a ruler, a pencil and a pair of compasses only, construct an angle of 75^0 in the space provided below.



16. Given that P = {2_1, 2_2, 3_1, 5_1}, find the value of P.

P = (2 x 2) x (3 x 5)

P = 4 x 15

15

x 4

P = 60

17. Use distributive property to workout: (10 x 34) + (10 x 66).

$$(10 \times 34) + (10 \times 66)$$
$$10\,(34 + 66)$$
$$10 \times 100$$
$$= 1000$$

18. Sarah was counted as the 13th from either sides of the line. How many people were in the line?

$$(\text{Pos} \times 2) - 1$$
$$(13 \times 2) - 1$$
$$26 - 1$$
$$= 25 \text{ people}$$

19. Rose is twice as old as Tom. The product of their age is 32 years. How old is Tom?

Let Tom's age be r

Tom x Rose = Product

$r \times 2r = 32\text{yrs}$

$2r^2 = 32$

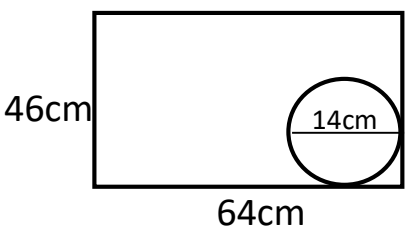
$\frac{2r^2}{2} = \frac{32}{2}$

$r^2 = 16$

$\sqrt[2]{r} = \sqrt[2]{16}$

$r = 4$ Tom is 4 years old

20. P.7 pupils were told by their teacher to cut out circular cards of diameter 14cm from a rectangular piece of paper measuring 64cm by 46cm. How many circular cards did they cut out?



No. of circular cards cut out

$$\frac{\text{Length}}{\text{Diameter}} \times \frac{\text{Width}}{\text{Diameter}}$$

$$\frac{\overset{4 \text{ rem } 8}{\cancel{64}\cancel{\text{cm}}}}{\cancel{14}_1\cancel{\text{cm}}} \times \frac{\overset{3 \text{ rem } 4}{\cancel{46}\cancel{\text{cm}}}}{\cancel{14}_1\cancel{\text{cm}}}$$

$= 4 \times 3$

$=$ 12 circular cards.

NOTE: Advise candidates to use shorter and simpler methods for Section A.

SECTION B: 60 MARKS

21. (a) Fill in the missing number in the box and then write it in words.

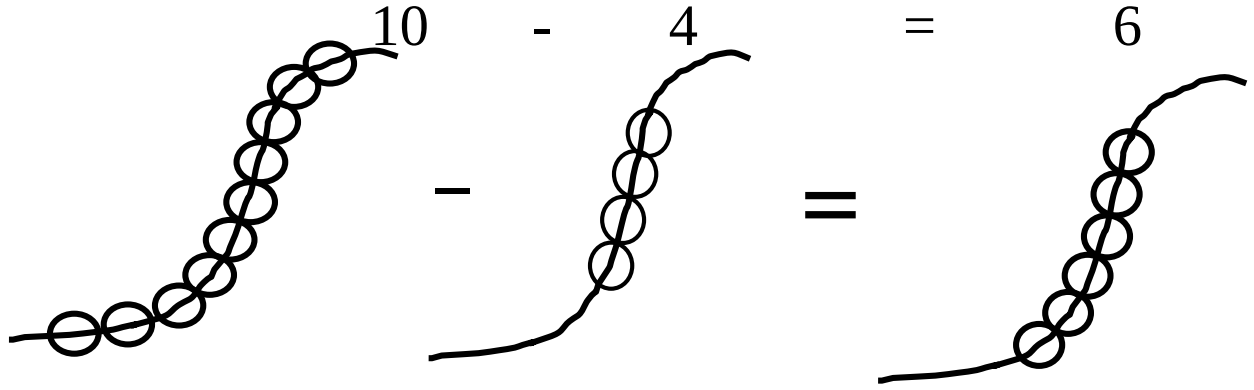
(02 Marks)

$$\boxed{1899} + 123 = 2022$$

One thousand eight hundred ninety nine.

(b) Draw the missing beads on the second thread to complete the subtraction statement shown below. (02 Marks)

10 - 4 = 6



(b) Write the subtraction statement shown on the threads above.

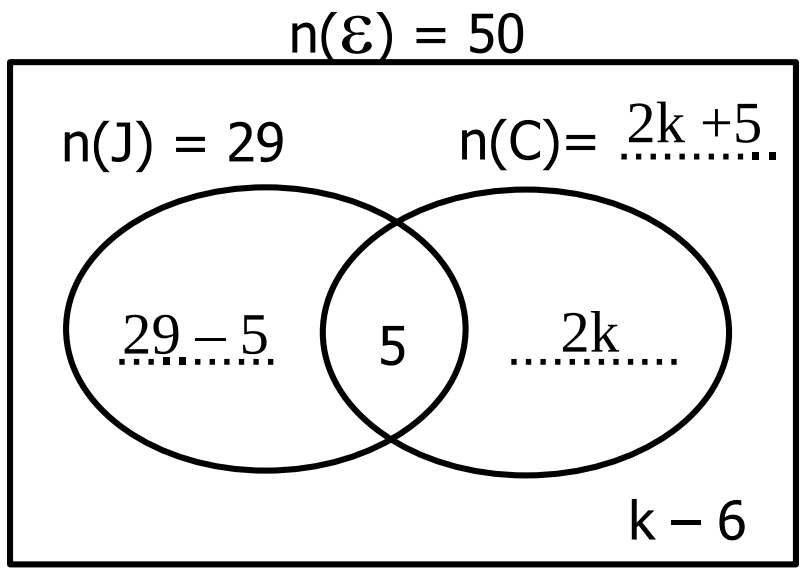
(01 Mark)

10 – 4 = 6

22. A trader imported 50 cars in total. 29 of them were imported from Japan(J), 2k cars were imported from China (C) but not Japan, 5 cars were imported from both China and Japan while (k – 6) cars were neither imported from Japan nor from China.

(a) Use the above information to complete the Venn diagram below.

(03 Marks)



(b) Find the value of k. *(02 Marks)*

$$29 + 2k + k - 6 = 50$$
$$3k + 23 = 50$$
$$3k + 23 - 23 = 50 - 23$$
$$3k = 27$$
$$\frac{\cancel{3}^{1}k}{\cancel{3}_{1}} = \frac{\cancel{27}^{9}}{\cancel{3}_{1}}$$
$$k = 9$$

(c) How many cars were imported from China altogether? *(01 Mark)*

$2k + 5$
$(2 \times 9) + 5$
$18 + 5$
23 cars

23. Mr. Ollowo bought the following items from a Supermarket.

2 dozen of eggs at Shs.200 each egg.
2 grosses of exercise books at Shs.150 each book.
2 scores of 20 pencils each at Shs.600 per score.

(a) How much money did Mr. Ollowo spend on all the items? *(04 Marks)*

Eggs
1 dozen → 12 items
2 dozen → 2 x 12
24eggs
1 egg costs shs.200
24 eggs cost shs.200 x 24
= shs.4,800

Books
1gross → 144 items
2 grosses → 2 x 144
288books
1 book costs shs.150
288 books cost shs.150 x 288
= shs.43,200

Pencils
1score → 20 pencils
1score costs shs.600
2 scores cost shs.600 x 2
= shs.1,200

Total Expenditure

Shs. 43,200
Shs. 4,800
+ Shs. 1,200
Shs. 49,200

(b) If Mr.Ollowo was given change of Sh.800. How much money did he have at first? *(01 Mark)*

Shs. 49,200
+ Shs. 800
Shs. 50,000

24. A Samsung Galaxy phone costs £200 in Britain. Given that the exchange rates are £1 =US$1.2 and US$ 1 = Ug Shs 3700, calculate the cost of the same Samsung Galaxy phone in Uganda shillings. *(04 marks)*

Pound to Dollars.

£1 = US$1.2
£200 = US$$\frac{12}{10} \times 200$
= US$240

Dollars to UG Shillings

US$ 1 = UgShs 3700
US$240 = UgShs 3700 x 240
= UgShs 888,000

The Samsung Galaxy phone costs UgShs 888,000

25. (a) Simplify: $\frac{x^0 + y^0 + z^0}{3}$, such that x, y and z is not 0. *(02 Marks)*

$$\frac{x^0 + y^0 + z^0}{3}$$ any number to power 0 is 1

$$\frac{1 + 1 + 1}{3}$$

$$\frac{3}{3}$$

$$= 1$$

(b) Solve: $5 \times 5^{2y} = 125$. *(03 Marks)*

5	125
5	25
5	5
	1

$= 5^3$

$5^1 \times 5^{2y} = 5^3$

$1 + 2y = 3$

$1 - 1 + 2y = 3 - 1$

$2y = 2$

$\frac{2^1 y}{2_1} = \frac{2^1}{2_1}$

$y = 1$

---

26. (a) A watch loses 3 seconds every after 2 hours. How long does it take to lose 1½ minutes? *(03 Marks)*

First change the 1½min to seconds.

1min = 60 sec

1½min = $\frac{3}{2_1} \times \frac{\cancel{60}^{30}}{}$

= 90 seconds

3 sec are lost in 2hrs

1 sec is lost in $\frac{2}{3}$hr

90sec will be lost in $\frac{2}{\cancel{3}_1} \times \frac{\cancel{90}^{30}}{}$

= 60 hours

(b) A fuel tank has a height of 7m. Its radius is 2m. What is its capacity? (Use π as $\frac{22}{7}$) *(03 Marks)*

Volume of the tank.

$\pi r^2 h$

$\frac{22}{\cancel{7}_1} \times 2m \times 2m \times \frac{\cancel{7}^1 m}{}$

$88m^3$

m^3 to cm^3.

1m = 100cm

$1m^3 = 100 \times 100 \times 100 cm^3$

$88m^3 = 88 \times 1000000 cm^3$

Volume $= 88000000 cm^3$

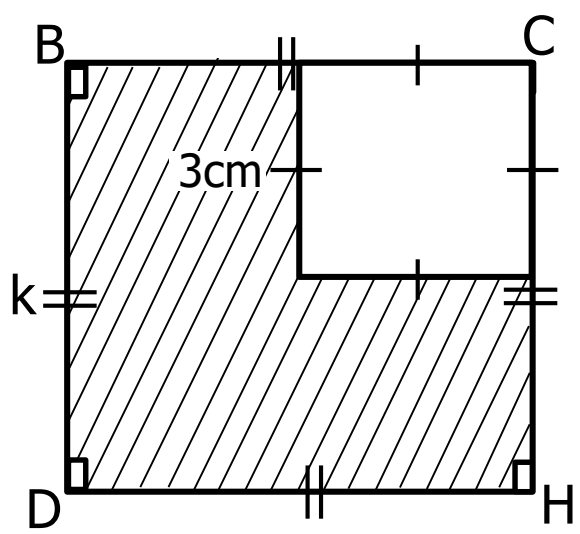
Capacity to litres .

$1000cm^3 = 1$ litre

$88000000cm^3 = \frac{88000\cancel{000}\cancel{cm^3}}{1\cancel{000}\cancel{cm^3}}$

= 88000 litres

27. In the figure below a small square of sides 3cm is drawn in a big square BCHD. If the area of the unshaded part is $\frac{1}{4}$ the area of BCHD.



Find the value of k. *(04 Marks)*

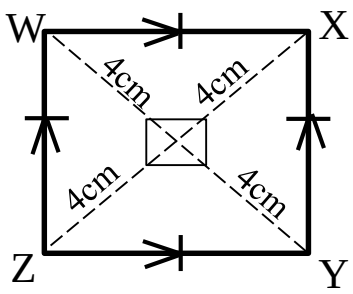
Area of the small square.	*9cm² is a quarter of BCHD. SO,* The area of BCDH will be;	Side of the big square (k).
s^2	$9cm^2 \div \frac{1}{4}$	s^2 = Area
3cm x 3cm	$9cm^2 \times \frac{4}{1}$	$s^2 = 36cm^2$
$9cm^2$	$= 36cm^2$	$\sqrt[2]{s} = \sqrt[2]{36}$
		S = 6cm
		k = 6cm

28. (a) Using a ruler, a pencil and a pair of compasses only, construct a regular quadrilateral **WXYZ** where diagonal **ZX** = **YW** = 8cm. *(04 Marks)*

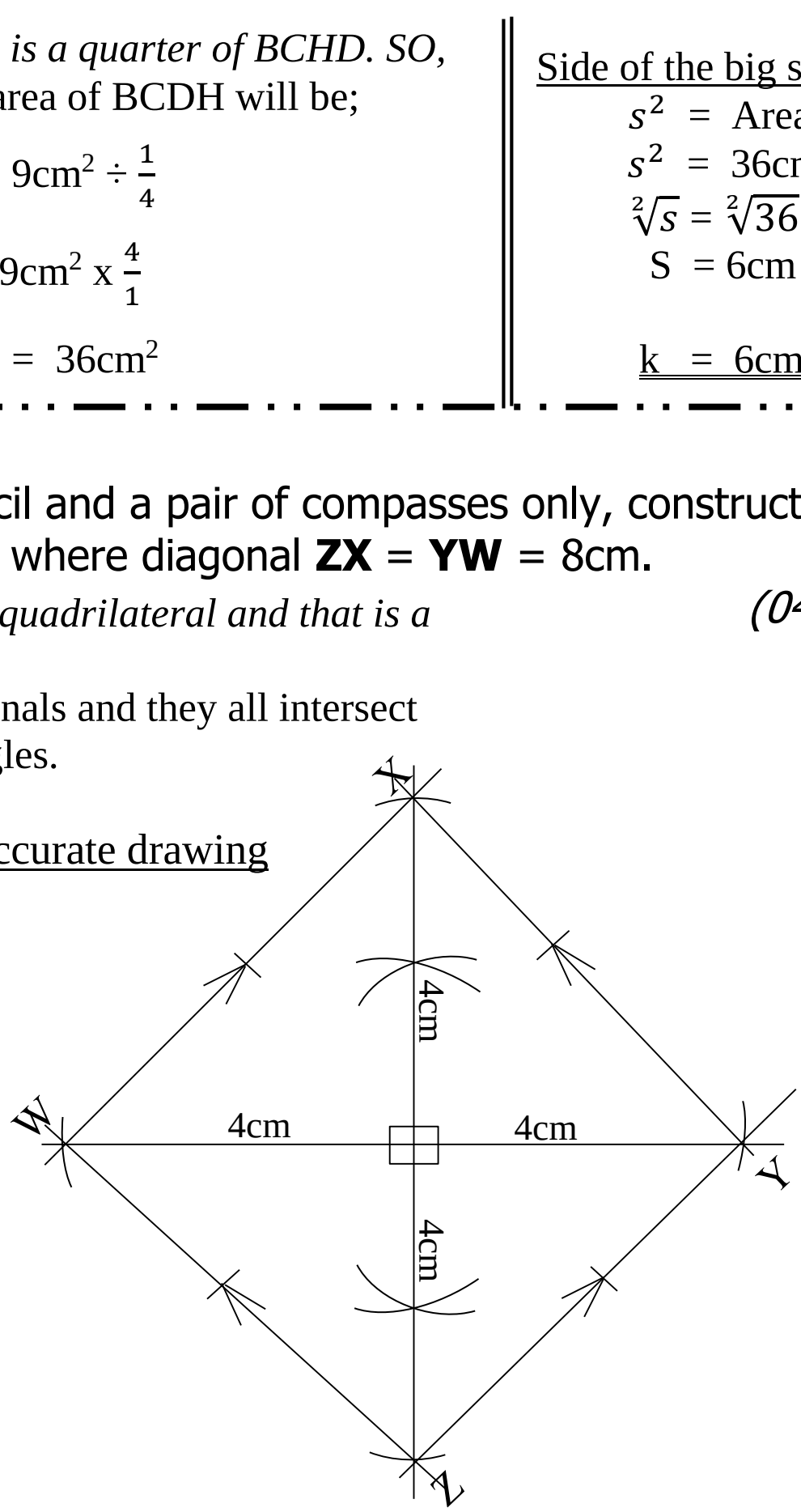
Remember: *We only have one **regular** quadrilateral and that is a **Square.***

- A square has equal diagonals and they all intersect at 90^0 forming 4 right angles.

Sketch



Accurate drawing



(b) Workout the perimeter of the quadrilateral formed. *(02 Marks)*

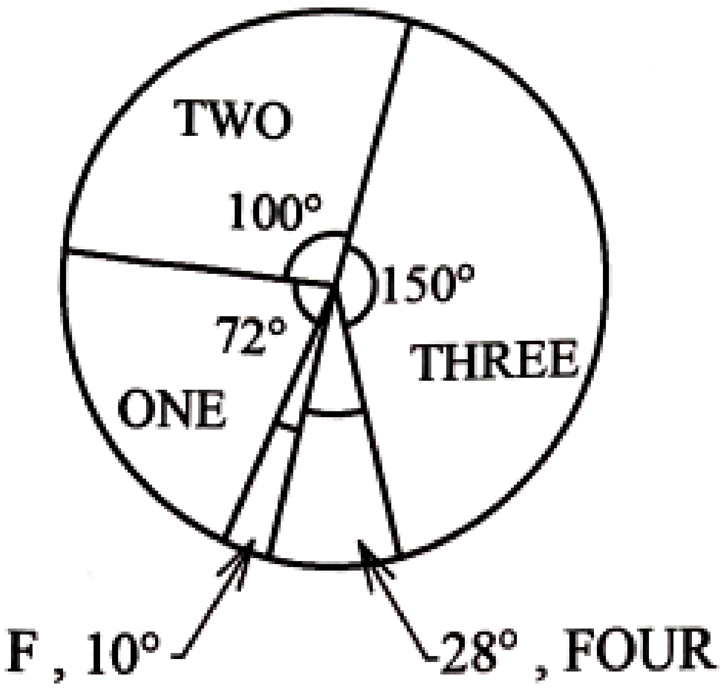
NOTE: After measuring the sides, they are all equal 5.5 / **5.6** / 5.7cm

$P = \quad 4sides$

4(5.6cm)

22.4cm

29. The pie chart below shows the grades obtained by 180 candidates who sat for their PLE at Quli Qulinga P/S in 2020.



(a) How many candidates obtained grade F? *(02 Marks)*

$\frac{1\cancel{0}^{\cancel{0}}}{\cancel{36}_1\cancel{0}^{\cancel{0}}} \times \cancel{180}^5$

1 x 5

5 candidates

(b) What was the percentage of candidates in grade one? *(02 Marks)*

Candidates in grade one

$\frac{\overset{36}{\cancel{72}}^{\cancel{0}}}{\underset{\cancel{2}\,1}{\cancel{360}}^{\cancel{0}}} \times \overset{1}{\cancel{180}}$

36 x 1

36 candidates

% in grade one

$\frac{\overset{2}{\cancel{36}}}{\underset{1}{\cancel{180}}} \times 10\cancel{0}\%$

2 x 10%

20%

30. A man gave $\frac{2}{5}$ of a sugarcane to his two sons and the rest to his daughters.

(a) Find the number of children the man has if each of the daughters got $\frac{1}{10}$ of the sugarcane. *(03 Marks)*

Fraction for 2 sons

$\frac{2}{5}$

Fraction for daughters

$\frac{5}{5} - \frac{2}{5} = \frac{3}{5}$

Number of daughters

$\frac{3}{5} \div \frac{1}{10}$

$\frac{3}{5_1} \times \frac{\cancel{10}^{2}}{1}$

3×2

$= 6$ daughters

Number of children

6 daughters + 2 sons

= 8 children .

(b) If each of the sons got a piece of sugarcane 32cm long. Find the Length of the sugarcane the man had. *(02 Marks)*

Remember: The man has 2 sons.

$2\left(32\text{cm} \div \frac{2}{5}\right)$

$2\left(\cancel{32}^{16}\text{cm} \times \frac{5}{\cancel{2}_1}\right)$

$2(16 \times 5)\text{cm}$

$2(80)\text{cm}$

$= 160$ cm

OR $32\text{cm} \times 2$

$= 64\text{cm}$

$64\text{cm} \div \frac{2}{5}$

$64\text{cm} \times \frac{5}{2}$

The sugarcane was 160cm long.

31. (a) Three pupils Ham, Seth and Japheth shared money in the ratio 4:6:9 respectively. Japheth received Shs24,300. How much money did the three pupils share altogether? *(03 Marks)*

Ham	Seth	Japheth	T.Ratio
4	6	9	19
		Shs.24,300	

Total share

$\text{Shs.}24{,}300 \div \frac{9}{19}$

$\text{Shs.}\cancel{24{,}300}^{2700} \times \frac{19}{\cancel{9}_1}$

$\text{Shs.}2{,}700 \times 19$

$=$ Shs.51,300

(b) How much more money did Seth get than Ham? *(02 Marks)*

Diff in ratio

$6 - 4$

$= 2$

$\frac{2}{\cancel{19}_1} \times \text{Shs.}\cancel{51{,}300}^{2700}$

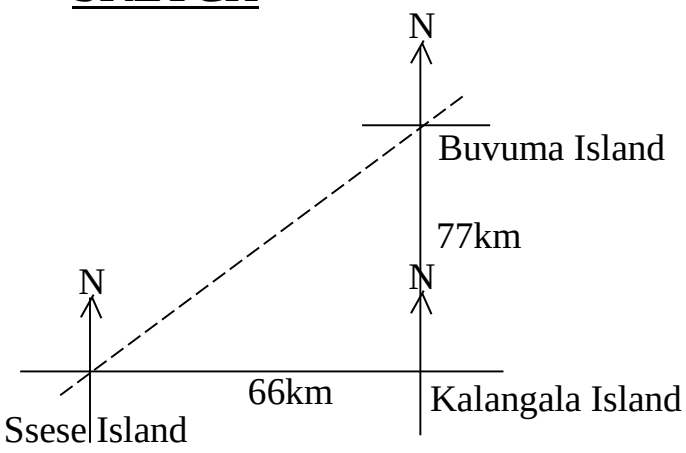
$\text{Shs.}2{,}700 \times 2$

$=$ Shs.5,400

32. Kalangala Island is 77km South of Buvuma Island. Ssese Island is 66km West of Kalangala Island.

(a) Using a scale of 1cm representing 11km, show the three Islands on an accurate diagram. *(04 Marks)*

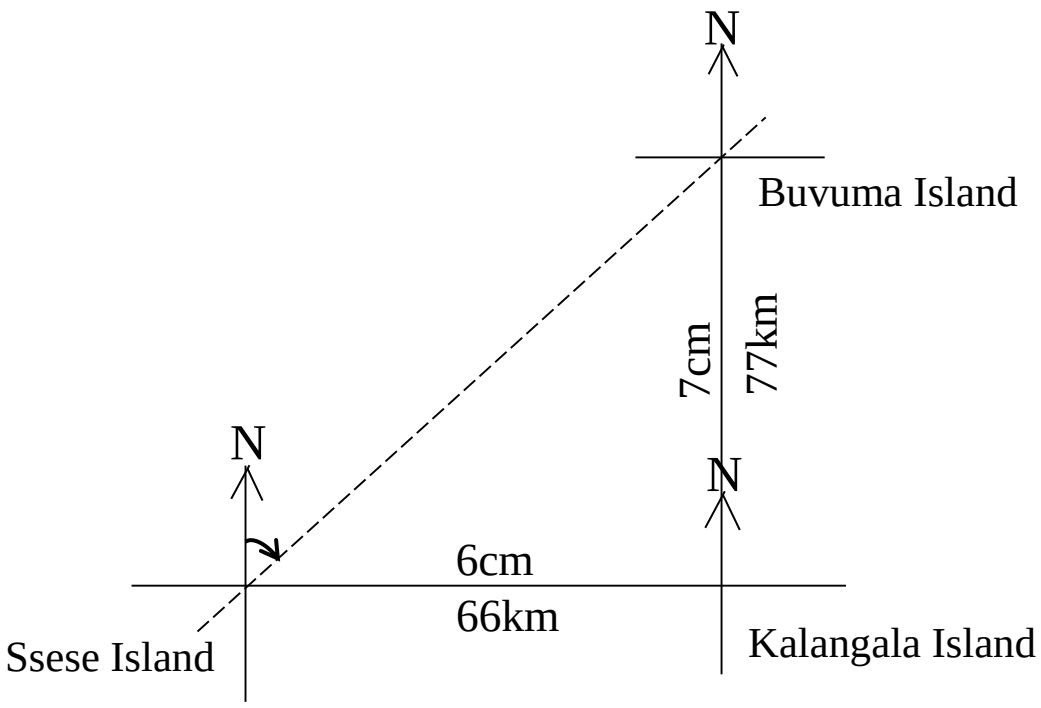
SKETCH



SCALE

11km rep 1cm	11km rep 1cm
77km rep $\frac{77}{11}$cm	66km rep $\frac{66}{11}$cm
= 7cm	= 6cm

ACCURATE DIAGRAM



(b) What is the bearing of Buvuma Island from Ssese Island? *(01 Mark)*

The bearing of Buvuma Island from Ssese Island 040^0

END