KENYA JUNIOR SCHOOL EDUCATION ASSESSMENT (KJSEA)

GRADE 9 MATHEMATICS GRADE 9

CODE: 010 YEAR: 2025 **TIME: 2 HOURS**

Candidate's Name: _____ MARKING SCHEME _____. **Assessment Number:** _____.

School Name: _____. **School Code:** _____.

Candidate's Signature: _____. **Date:** _____ JSS _____.

INSTRUCTIONS TO CANDIDATES:

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1. Write your name and class in the spaces provided above.
2. The paper consists of two sections: Section A and Section B.
3. Answer ALL questions in Section A and Section B.
4. Show all your working in the spaces provided.
5. All questions carry marks as indicated.
6. Mathematical tables and electronic calculators may be used.

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For Official Use Only			
Task	Task 1	Task 2	TOTAL
Question	1	2	3QUESTIONS
Maximum Score	20	10	30 MARKS
Candidate's Score			

This paper consists of **17 printed pages.** Candidates should check the question paper to ascertain that all the pages are printed a indicated and that no questions are missing.

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SECTION A (20 Marks)

Answer all the questions in Section A on the separate answer sheet provided.

1. Work out: $72 \div 9 + 15 \times 272$

A. 2400 B. 3840 C. 4088 D. 5000

2. Simplify:

$6(2x-3y)-2(4x-y)$

A. $4x - 16y$ B. $8x - 4y$

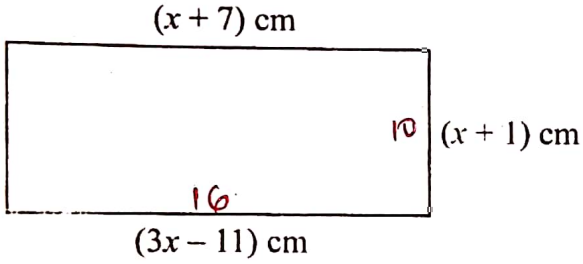
C. $4x - 16y$ D. $8x - 20y$

3. Express the following in index form: $2^5=32$

A. $\log_2 32=5$ B. $\log_{32} 2=5$

C. $\log_5 32=2$ D. $5^2=32$

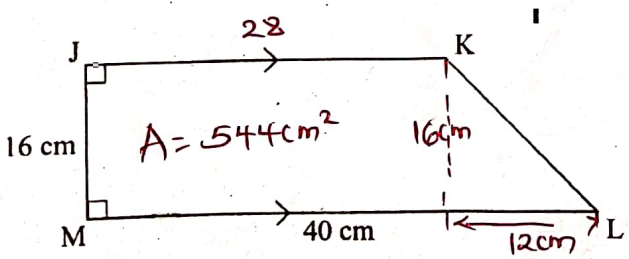
4. The figure drawn below is a rectangle.



What is the perimeter of the rectangle?

A. 52 cm B. 42 cm C. 26 cm D. 9 cm

5. The area of the trapezium JKLM drawn below is 544 cm^2. Line JK is parallel to line LM and line JM is the perpendicular distance.



What is the length of line KL?

A. 12 cm B. 16 cm

C. 20 cm D. 28 cm

WORKING SPACE.

BODMAS

$8 + 15 \times 272$

$8 + 4080 = 4088$

$12x - 18y - 8x + 2y$

$4x - 16y$

$a^b = c \Rightarrow \log_a c = b$

$\log_2 32 = 5$

$x + 7 = 3x - 11$

$\frac{2x}{2} = \frac{18}{2}$

$x = 9$

$P = 2(L+W)$

$2(16+10)$

$2(26)$

$= 52cm.$

$A = \frac{1}{2}(a+b)h$

$\frac{544}{8} = \frac{(40+b)}{2} \times \frac{8}{8}$

$68 = 40 + b$

$b = 68 - 40$

$= 28$

$KL^2 = 12^2 + 16^2$

$KL^2 = 144 + 256$

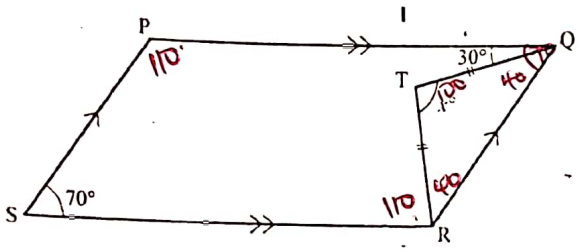
$\sqrt{KL^2} = \sqrt{400}$

$KL = 20cm.$

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WORKING SPACE.

6. The figure PQRS drawn below is a Working Space parallelogram. Angle PSR I 70°, angle PQT I 30° and line TQ = line TR.



What is the size of the angle marked x?

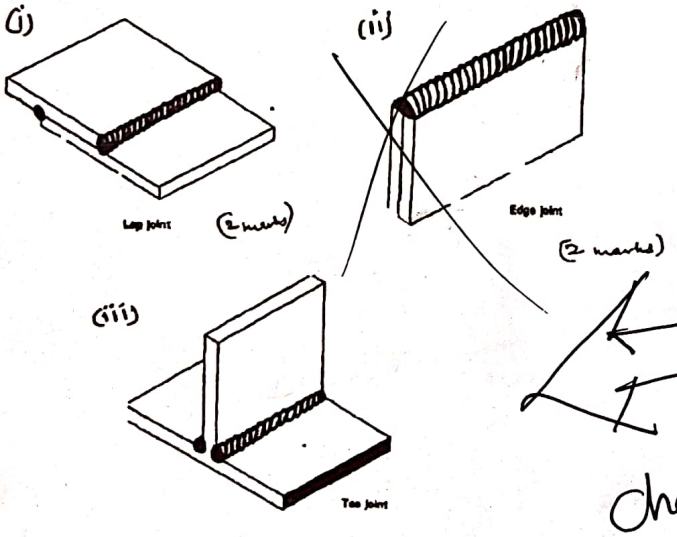
A. 70°

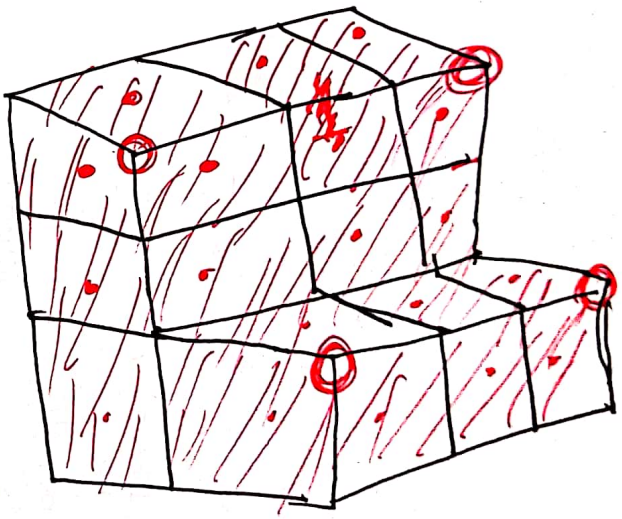
B. 80°

C. 100°

D. 120°

7. The following stack of cubes was dipped in paint.





How many cubes had paint on two faces only?

A. 9 B. 22 C. 24 D. 5.0

A 9 B. 4 C. 5 D. 12

Change the Question

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8. Halima bought the following items from a shop:

Item	Quantity	Price per unit (Sh)
Sugar	2 kg	112.00
Milk	4 packets (1 litre each)	40.00 per packet
Cooking fat	1 kg	120.00
Wheat flour	2 kg	210.00 (total)
Salt	1½ kg	24.00 per kg

She paid for all the items using **two 500 shilling notes**.

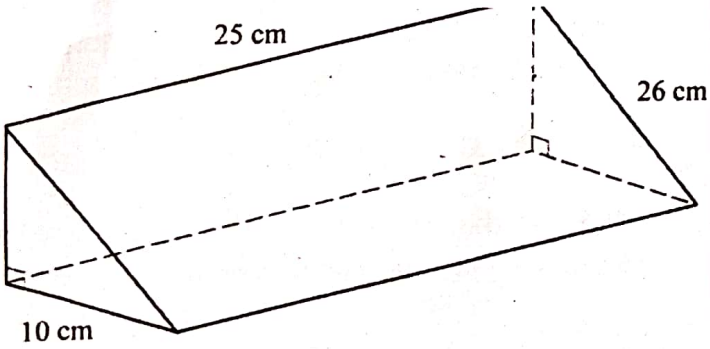
How much balance did Halima receive?

A. Sh 220
B. Sh 140
C. Sh 494
D. Sh 780

WORKING SPACE.

112 x 2 = Sh 224
40 x 4 = Sh 160
120
210
3½ x 24 = 84
798
1000 − 798
Balance = Sh. 202
Total

9. The figure drawn below is a right-angled triangular prism.



What is the volume of the prism?

A. p 3 000 cm^3

B. 3 200 cm^3

C. 6000 cm^3

D. 6 500 cm^3

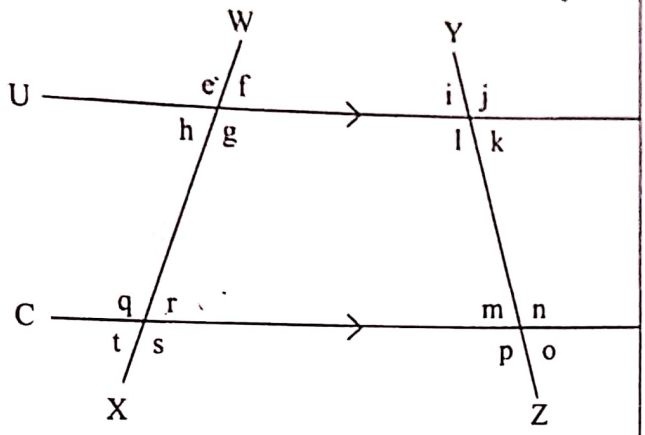
Volume = Crossectional Area x L.
Crossectional Area = 1½ x 24
= 120 cm^2

$26^2 - 10^2 = h^2$
$676 - 100 = h^2$
$\sqrt{576} = \sqrt{h^2}$
$h = 24$

V = 120 x 25
= 3000 cm^3

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10. In the figure below lines UV and CD are parallel. Lines WX and YZ are transversals.



Which one of the following statements is true about the figure?

A. angles r and I are co-interior

B. angle j is vertically opposite to angle n

C. angle e is alternate to angle I

~~D.~~ angle r corresponds to angle f

11. A farmer harvested I 200 crates of tomatoes in the year 2024. This was a 20% decrease from the year 2025. How many crates of tomatoes did the tanner harvest in the year 2025?

A. 1 500 B. I 440 C. 960 D. 240

12. A school has a ratio of boys to girls as 5:3. If there are 120 boys, how many girls are there?

A. 48 B. 60 ~~C.~~ 72 D. 80

13. Work out: $\left(\frac{1}{5}\right)2 + (0.5)2 - \left(\frac{3}{10}\right)2$

A. 0.04 B. 0.16 C. 0.20 D. 0.25

14. Tap A fills a tank in 3 hours while Tap B fills it in 6 hours. If both are opened together, how long will it take to fill the tank?

A. 1 hr 30 min B. 2 hrs

C. 2 hr 15 min D. 3 hrs

WORKING SPACE

1200 crates = 80%
× 100%
100 × 1200 / 80 = 1500 crates

1200 crates = 120%
× 100%
100x × 1200 / 120% = 1000 crates

B : G
5 : 3
120 ?
5/8 = 120
3/8 +
3/8 × 24 + 20 × 8/5
= 72

LCM 3 3 6 1 2 2
In 1 hour Tap A = 1/3
B = 1/6
1/3 + 1/6 = (2+1)/6 = 3/6 = 1/2
1/2 → 1 hour
= 2 hours.

SECTION B (80 Marks)

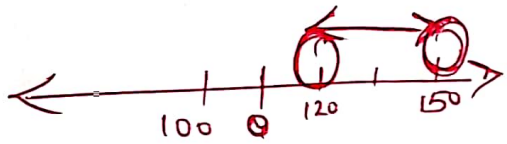
Answer ALL the questions in the spaces provided.

21. The number of goats on a farm is at least 120 but less than 150.
    a) Write this statement as a compound inequality. (1 mk)

let the number of goats be x.

$120 < x < 150$

    b) Represent it on a number line. (2 mks)



22. A tap can fill a tank in 12 minutes while another can empty it in 18 minutes. If both taps are opened together, how long will it take to fill the tank? (2 mks)

Filling in a minute $= 1/12$ and

To empty in a minute $1/18$

Fraction remaining $\frac{1}{12} - \frac{1}{18}$ $\frac{3-2}{36} = 1/36$.

1min $= 1/36 \times 36/36$ $1 \times 1\text{min} \times \frac{36}{1} = 36$ minutes.

23. If p=5,q=−3,r=2, evaluate $2p^2-qr$ (3 mks)

$2(5) - (-3)(2)$

$10 + 6 = 16$

24. A sofa set has a cash price of Ksh 25,000. A customer pays Ksh 6,000 deposit and the balance in 12 equal installments of Ksh 1,800. Find the hire purchase price and the extra amount paid. (3 mks)

H.P = D + M.I

$6000 + (12 \times 1800)$

$6000 + 21600 = 27,600$

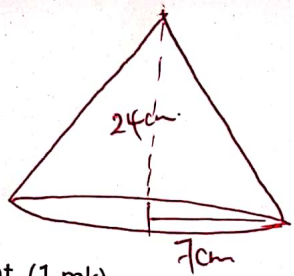
Extra paid

$27600 - 25000$

sh. 2600.

25. A solid cone has a base radius of 7 cm and height 24 cm.
    a) Draw a net of the cone. (1 mk)

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b) Find the slant height. (1 mk)

$24^2 + 7^2$

$576 + 49 = \sqrt{625} = 25\text{cm}.$

c) Find the surface area of the cone. (2 mks)

SA of a cone $= \pi r^2 + \pi r l$

$\frac{22}{7} \times 7 \times 7 + \frac{22}{7} \times 7 \times 25$

$154 + 550 = 704\ \text{cm}^2.$

26. A triangle has sides 5 cm, 12 cm, and 13 cm. Find its area. (3 mks)

$A = \sqrt{s(s-a)(s-b)(s-c)}$

$s = \frac{5+12+13}{2} = \frac{30}{2} = 15$

$\sqrt{15(15-5)(15-12)(15-13)}$

$\sqrt{15 \times 10 \times 3 \times 2}$

$\sqrt{156}$

=

27. Solve for x: $2^x = 64$ (2 mks)

$2^x = 6.4$

expres 64 as a power of 2

$2^x = 2^6$ since bases are same then $x = 6$.

28. The line through points (–2, y) and (4, 6) has gradient 2. Find y. (2 mks)

$G = \frac{y_1 - y_0}{x_1 - x_0}$

$2 = \frac{6-y}{4+2}$

$6 \times 2 = \frac{6-y}{6} \times 6$

$6 - y = 12$

$-y = 6$

$y = -6.$

29. Find the equation of the line that passes through (1, –2) and (3, 4). (3 mks)

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$G = \frac{y_1 - y_0}{x_1 - x_0}$

$= \frac{4+2}{3-1} = \frac{6}{2} = 3$

equation

$\frac{y+2}{x-1} = 3$

$y + 2 = 3(x-1)$

$y + 2 = 3x - 3$

$y = 3x - 5$

30. Solve for m and p in the following simultaneous equation.

3m–4p=12. (3 mks)

2m+p=10

elimination method.

$3m - 4p = 12) 2$

$2m + p = 10) 3$

$6m - 8p = 24$

$6m + 3p = 30$

$-11p = -6$

$p = 6/11$

$3m - 4(6/11) = 12$

$3m - \frac{24}{11} = 12$

$3m = 12 + \frac{24}{11}$

$m = \frac{12 + \frac{24}{11}}{3}$

$m = 4.73$

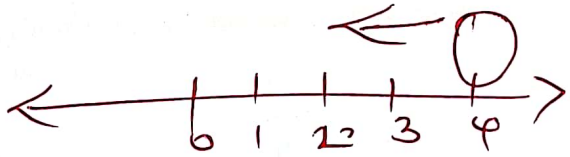
31. Solve the inequality: 2x+3<11. Represent your solution on a number line. (2 mks)

$2x + 3 < 11$

$2x < 11 - 3$

$\frac{2x}{2} < \frac{8}{2}$

$x < 4$



32. A father is three times as old as his son. In 5 years, their total age will be 70 years. Find their present ages. (3 mks)

Son $x + 5$ } Total 70

Father $3x + 5$ }

$x + 5 + 3x + 5 = 70$

$4x + 10 = 70$

$\frac{4x}{4} = \frac{60}{4}$

$x = 15$

Son 15 years

Father 45 years

33. Evaluate the following matrix.

$\begin{bmatrix} 3 & 2 \\ 1 & 4 \end{bmatrix} \begin{bmatrix} 2 & -1 \\ 5 & 0 \end{bmatrix}$ (3 mks)

$\begin{bmatrix} 11 & -3 \\ 22 & -1 \end{bmatrix}$

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38. A rectangular playground is 30 m long. Its perimeter is 100 m. Find its width. (3 mks)

$P = 2(L + W)$ M_1

$100 = 2(30 + W)$

$100 = 60 + 2W$

$100 - 60 = 2W$ M_1

$40 = 2W$

$20 = W$ A_1

39. Find the gradient and y-intercept of the line $3x+2y=12$. (3 mks)

$y = mx + c$

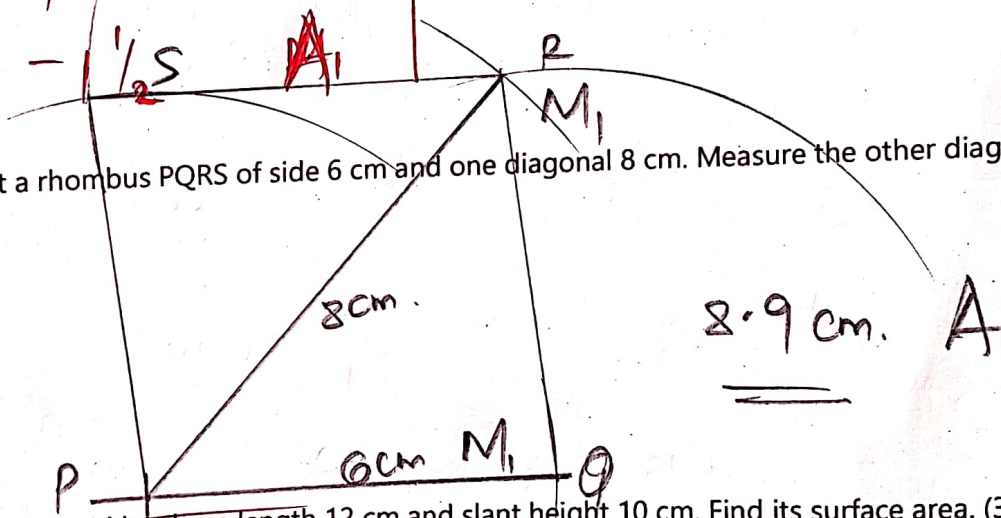
$2y = -3x + 12$ M_1

$y = -3/2 x + 6$

$G = -1\frac{1}{2}$ A_1

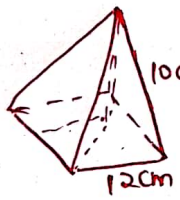
the y intercept $= 6$ A_1.

40. Construct a rhombus PQRS of side 6 cm and one diagonal 8 cm. Measure the other diagonal. (3 mks)



8.9 cm. A_1

41. A square pyramid has base length 12 cm and slant height 10 cm. Find its surface area. (3 mks)



$12^2 + 12^2$

$144 + 144$

$10^2 - 6^2$

$100 - 36$ M_1

$\sqrt{64} = 8$

Area of Triangle.

$(\frac{1}{2} \times 12 \times 8) \times 4$

48 (square) M_1

$192 + 144$

192

144

$336\ cm^2$ A_1

42. A salesman earns a basic salary of Ksh 20,000 plus 10% commission on sales above Ksh 100,000. In August, his sales were Ksh 350,000. Find his total earnings. (3 mks)

Commission $\frac{10}{100} \times 350,000 = 35000$ M_1

Comm + B.S $20,000 + 35000$ M_1

$55,000$ A_1

; Jane is 4 years older than twice Peter's age.

a) Write an expression for Jane's age in terms of Peter's age p. (1 mk)

Jane $2p+4$

Peter p

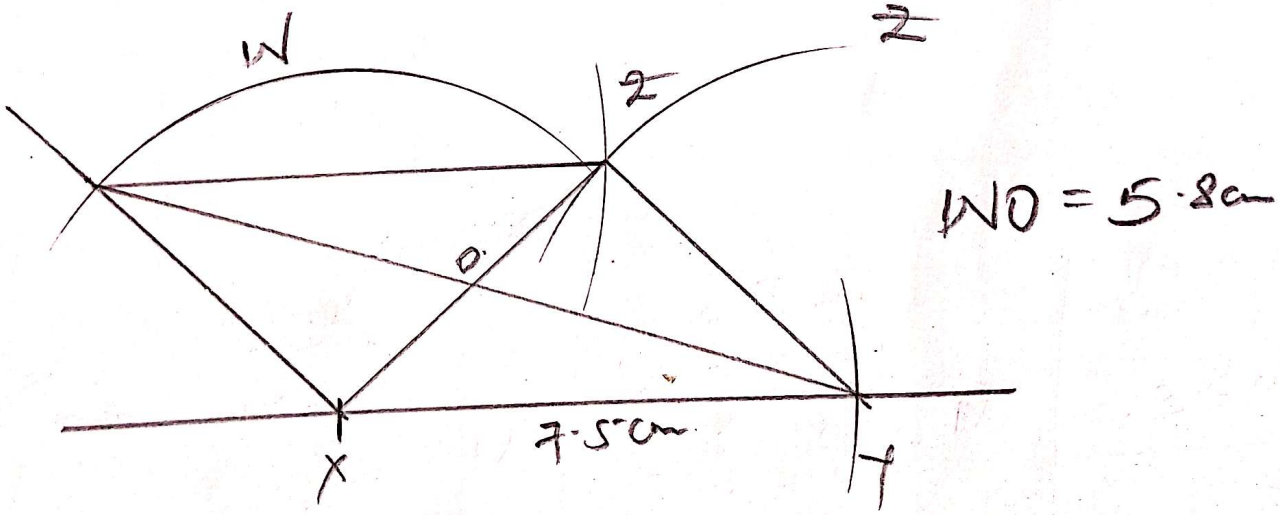
Jane $(2p+4)$ years.

b) If Peter is 7 years, find Jane's age. (2 mks)

$2(7)+4$

$14+4 = 18$ years

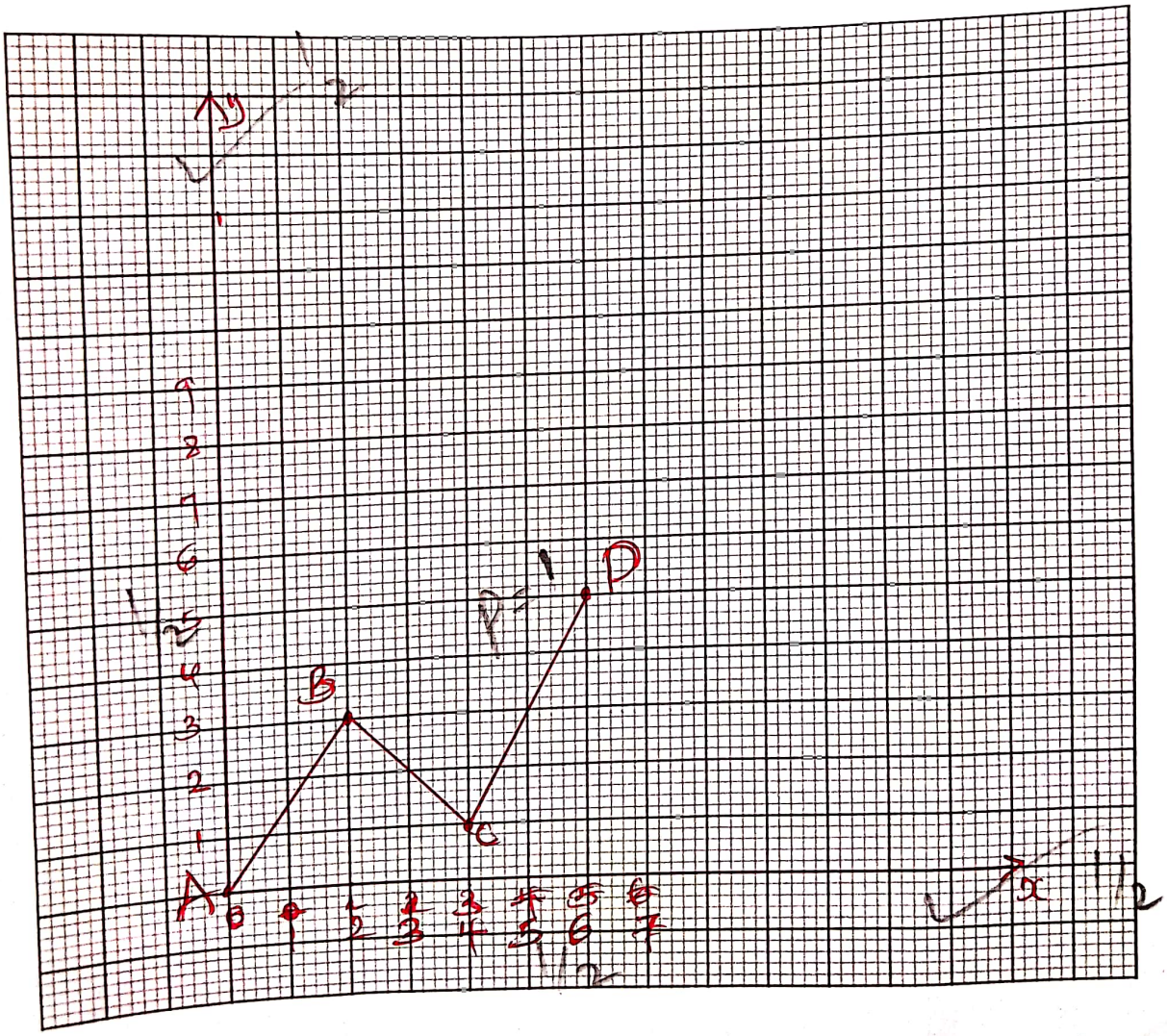
44. Construct a parallelogram WXYZ such that lines WZ = 5 cm and XY =7.5 cm. Angle WZY = 135°. Join W to Y and Z to X and let the point of intersection be O. What is the length of line WO?



WO = 5·8cm

45. On the grid provided, plot the points A(0,0), B(2,3), C(4,1), D(6,5) and join them in order. (3 mks)

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34. A rectangular tank measures 2.4 m by 1.5 m by 1.2 m. Find its capacity in litres. (3 mks)

$V = L \times W \times h$ M_1

$2.4 \times 1.5 \times 1.2$

$4.32 m^3$

$1m^3 = 1000l$ M_1

$4.32m^3$ $\downarrow$

$4.32 \times 1000 = 4320$ litres A_1

35. The cost of 5 pens and 3 rulers is Ksh 340. The cost of 2 pens and 4 rulers is Ksh 220. Find the cost of one pen and one ruler. (3 mks)

let pens be x and rulers be y.

$(5x + 3y = 340)2$ M_1

$(2x + 4y = 220)5$

elimination method

$10x + 6y = 680$

$10x + 20y = 1100$ M_1

$-14y = -420$

$\frac{-14y}{-14} = \frac{-420}{-14}$

$y = 30$

$5x + 90 = 340$ $y = 30$

$5x = 250$ $x = 50$ A_1

$\frac{5x}{5} = \frac{250}{5}$

$x = 50$

36. A farmer had 240 bags of maize. He sold 1/5 of them and donated 1/3 of the remainder.

a) How many did he donate? (2 mks)

A whole $\frac{1}{1} = 240$

$1 - \frac{1}{5} = \frac{5-1}{5} = \frac{4}{5}$ M_1

so donated $\frac{1}{3}$ of $\frac{4}{5}$

Remainder $\frac{2}{3}$ of $\frac{4}{5} = \frac{8}{15}$.

$\frac{1}{3} \times 192 = 64$ A_1

$\frac{8}{15} \times 240$

$= 128$ bags A_1

b) How many bags remained? (1 mk)

$\frac{2}{3}$ of $\frac{4}{5} = \frac{8}{15}$ $192 - 64$

$\frac{8}{15} \times 240 = 128$ bags A_1 $= 128$ A_1

37. Evaluate: $\frac{5 \times 10 - 8}{12 \div 3 + 2}$ (3 mks)

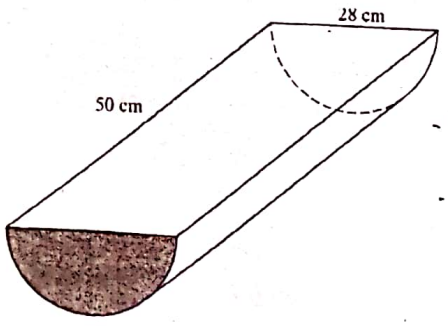
BODMAS

Num $50 - 8 = 42$ M_1

Den $4 + 2 = 6$ M_1

$\frac{42}{6} = 7$ A_1.

15. The figure below represents a half of a cylindrical piece of Wood of diameter



What is the surface area of the Wood? (Take π= 27/2).

A. 6 416 cm^2 B. 4 216 cm^2

C. 3 908 cm^2 D. 2 816 cm^2

16. Multiply: 3.45 × 25.
A. 86.25 B. 85.75 C. 86.50 D. 87.25

17. Write 0.125 as a fraction in its simplest form.
A. 1/4 B. 1/8 C. 1/6 D. 1/10

18. The mean of five numbers is 12. If four of the numbers are 10, 11, 12, and 13, what is the fifth number?
A. 12 B. 13 C. 14 D. 16

19. Find the gradient of the line joining points (–3, 4) and (2, –1).
A. –1 B. –2 C. 1 D. 2

20. Using logarithms, evaluate

$\sqrt[3]{567}$.

A. 8.25
B. 8.29
C. 8.33
D. 8.35

WORKING SPACE

$\pi r^2 + \frac{1}{2}\pi DH + L \times W$

$\frac{22}{7} \times 14 \times 14 + \frac{1}{14} \times \frac{22}{7} \times 28 \times 50 +$

$50 + 28$

$616 + 2200 + 1400$

$= 4216\ cm^2$

86.25

assume the 5th No be x

So $\frac{10+11+12+13+x}{5} = 12$

$\frac{5 \times 46+x}{5} = 12 \times 5$

$46 + x = 60$

$x = 60 - 46 = 14$

19) $\frac{y_1 - y_0}{x_1 - x_0} \Rightarrow \frac{-1-4}{2+3} \quad \frac{-5}{5} = -1.$

20

$\sqrt[3]{567} = 567^{1/3}$ M_1

Taking log to base 10

$\log 567^{1/3}$ M_1

$= \frac{1}{3} \log 567$

$\frac{1}{3} \times 2.7536$ A_1.

$= 8.2608$