2019 BECE Mathematics (Maths) Past Questions Paper One

1. Given that

$A.\ 4, 8$

$B.\ 2, 8, 12$

$C.\ 4, 6, 8, 12$

$D.\ 2, 4, 6, 8, 10, 12$

2. Express 0.000344 in standard form.

$A.\ 3.44 \times 10^{-6}$

$B.\ 3.44 \times 10^{-5}$

$C.\ 3.44 \times 10^{-4}$

$D.\ 3.44 \times 10^{-3}$

3. Which of the following numbers is the largest?

A. – 70
B. – 50
C. – 3
D. – 2

4. Correct 0.024561 to three significant figures.

A. 0.03
B. 0.025
C. 0.0245
D. 0.0246

5. Simplify: $(7^5 \times 7^3) \div 7^6$

$A.\ 7^9$

$B.\ 7^4$

$C.\ 7^3$

$D.\ 7^2$

6. How many lines of symmetry has a square?

A. 0
B. 1
C. 2
D. 4

7. Solve the equation $10 - \frac{(x+3)}{2} = 8.$

A. – 9
B. – 3
C. 1
D. 15

8. Factorize: kx+2xt-4k-8t.

A. (k-2t)(x+4)
B. (k+2t)(x+4)
C. (k+t)(x-4)
D. (k+2t)(x-4)

9. There are 12 boys and 18 girls in a class. Find the fraction of boys in the class.

A. 2/5
B. 3/5
C. 2/3
D. 3/4

10. Express 30% as a fraction in its lowest term.

A. 7/10
B. 3/20
C. 7/20
D. 3/10

11. Make k the subject of the relation, , $ky - k = y^2$.

$A.\ k = \frac{y^2}{y-1}$

$B.\ k = \frac{y^2}{y+1}$

$C.\ k = -\frac{y^2+1}{y+1}$

$D.\ k = \frac{y^2+1}{y-1}$

12. The mean of the numbers 5, 2x, 4 and 3 is 5. Find the value of x.

A 3
B 4
C 5
D 8

13. Find the rule of the mapping:

$$\begin{array}{ccccccc} x & 1 & 2 & 3 & 4 & 5 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ y & 3 & 1 & -1 & -3 & -5 \end{array}$$

$A.\ y = 2x + 2$

$B.\ y = -2x + 2$

$C.\ y = 4x$

$D.\ y = -2x + 5$

14. The two sides of a parallelogram are 4.8m and 7.2m long. Finds its perimeter.

A. 48.0 m
B. 34.6 m
C. 24.0 m
D. 17.3 m

15. A tank in the form of a cuboid has length 6m and breadth 4m. If the volume of the tank is 36m2, find the height.

A. 0.67m
B. 1.5m
C. 1.8m
D. 5.0m

16. If the bearing of A from B is 240°, find the bearing of B from A.

A. 040°
B. 060°
C. 120°
D. 300°

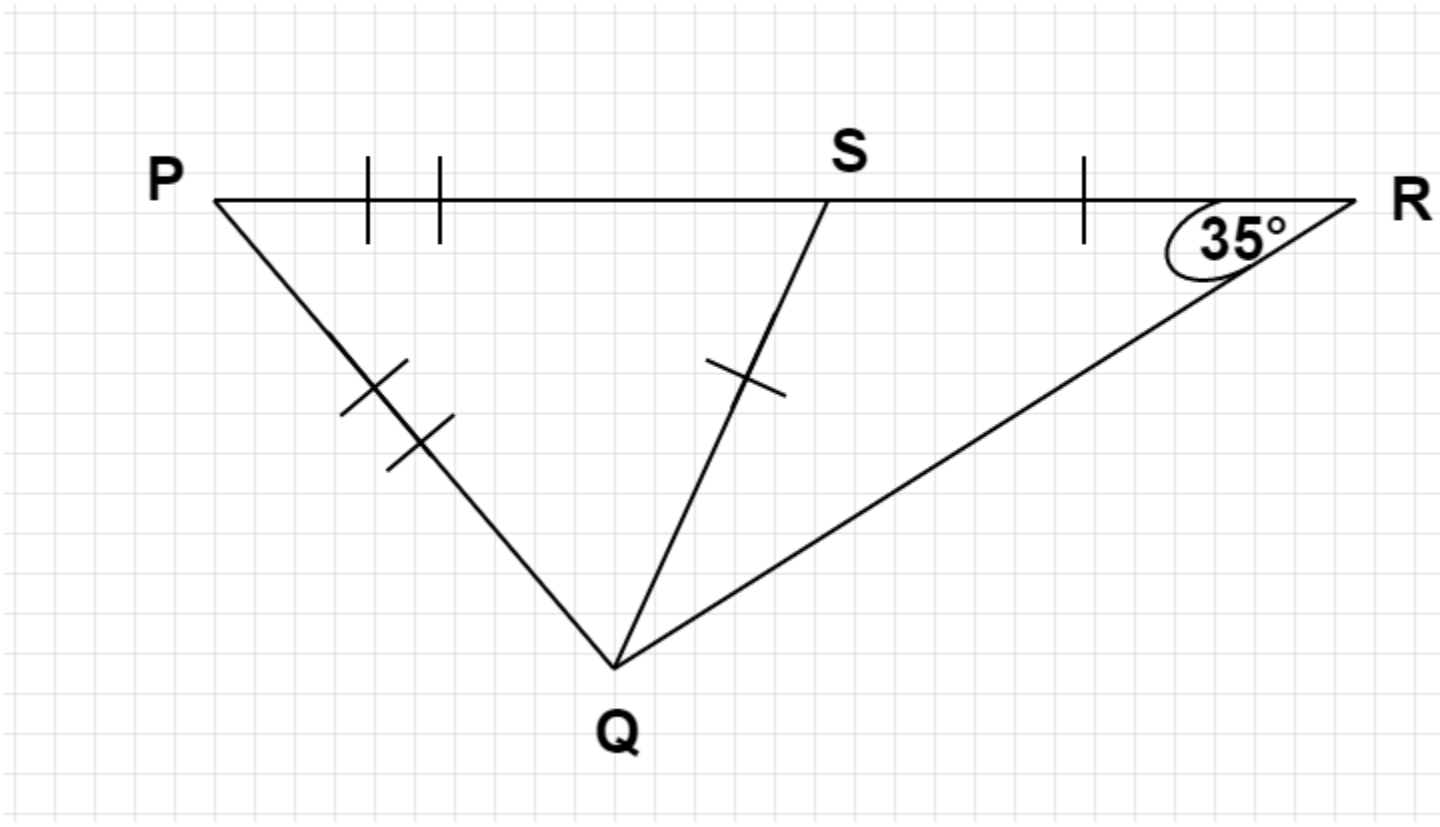
17. Find the truth set of the inequality $2y+5<4y-5$. A. $\{y:y>5\}$
B. $\{y:y<5\}$ C. $\{y:y>1\}$
D. $\{y:y>0\}$

18. Find the gradient of the straight line which passes through the points (-3,4) and (3,-2).

A. 2
B. 1
C. – 2
D. – 1

19. If 6:8=r:48, find the value of r.

A. 36
B. 34
C. 14
D. 12



20. Find $\angle QPS$ in the diagram.

A. 70°
B. 40°
C. 35°
D. 20°

21. A man travelled a distance of 8km in an hour. How long will it take him to cover a distance of 12km, travelling at the same speed?

$A.\ 1\frac{1}{3}hrs$

$B.\ 1\frac{1}{2}hrs$

$C\dot{1}\frac{3}{4}hrs$

$D\ 2\ hrs$

22. A number is selected at random from: 25,26,27,28… 35. Find the probability that the number selected is a prime number.

A. 6/11
B. 3/11
C. 2/11
D. 1/11

23. Express $\frac{12}{25}$ in decimal fraction.

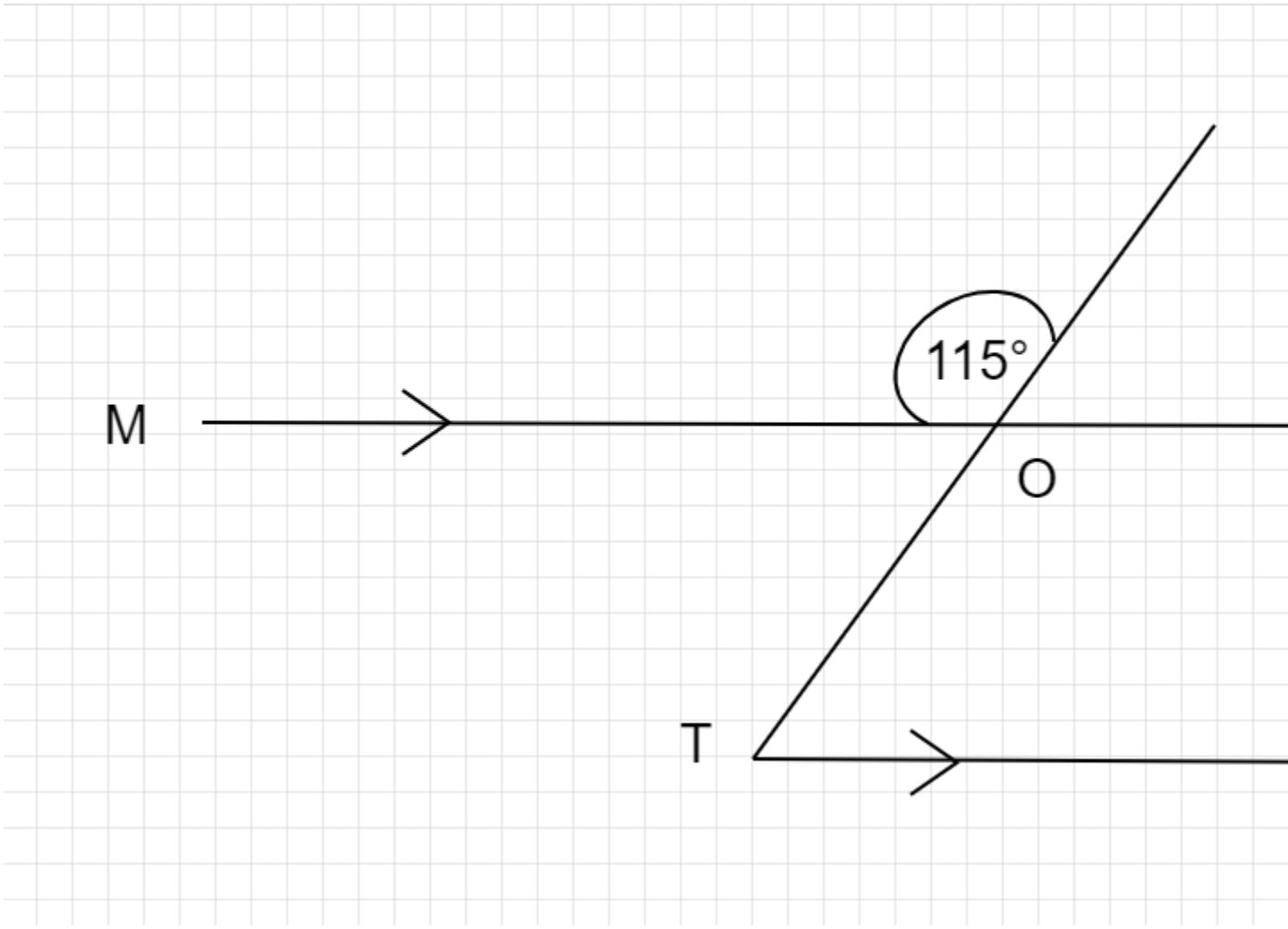
A. 0.0408
B. 0.048
C. 0.408
D. 0.48

24. Find the diameter of a circle whose circumference is 88cm. $\left[take\ \pi = \frac{22}{7}\right]$.

A. 14 cm
B. 22 cm
C. 28 cm
D. 20 cm

25. When twelve is subtracted from three times a certain number and the result is divided by four, the answer is eighteen. Find the number.

A. 84
B. 40
C. 28
D. 20



26. In the diagram, line MN is parallel to line TU, line MN at O and Angle MQS=115°. Find Angle OTU.

A. 65°
B. 55°
C. 45°
D. 25°

27. Given that $r = \begin{pmatrix} -3 \\ -5 \end{pmatrix}$ $and\ t = \begin{pmatrix} 3 \\ 5 \end{pmatrix}$, $find\ r + t.$

$A.\ \begin{pmatrix} -6 \\ 10 \end{pmatrix}$

$B.\ \begin{pmatrix} -6 \\ -10 \end{pmatrix}$

$C.\ \begin{pmatrix} 0 \\ -10 \end{pmatrix}$

$D.\ \begin{pmatrix} 6 \\ 10 \end{pmatrix}$

28. A trader sold 90 oranges at 3 for GH₵ 0.75. How much did she get from selling all the oranges?

A. GH₵ 22.50
B. GH₵ 67.50
C. GH₵ 75.00
D. GH₵ 225.50

29. Express 72 as a product of prime factors

$A.\ 2^3 \times 3^2$

$B.\ 2^2 \times 3^3$

$C.\ 2^2 \times 3^2$

$D.\ 2 \times 3$

30. Simplify: $3a \ \times 24ab.$

$A.\ 27\ ab^2$

$B.\ 27a^2b$

$C.\ 72ab^2$

$D.\ 72a^2b$

31. Simplify: $\begin{pmatrix} -2 \\ 3 \end{pmatrix} + \begin{pmatrix} -1 \\ 5 \end{pmatrix}$

$A.\ \left(-3 - 2\begin{pmatrix} -3 \\ -2 \end{pmatrix}\right.\ B.\ \begin{pmatrix} -1 \\ 2 \end{pmatrix}\ C.\ \begin{pmatrix} -3 \\ 8 \end{pmatrix}\ D.\ \begin{pmatrix} -1 \\ -2 \end{pmatrix}$

32. Multiply 247 by 32

A. 6916
B. 7804
C. 7904
D. 1235

33. Evaluate: $(0.07 \times 0.02) \div 14$.

A. 0.01
B. 0.001
C. 0.0001
D. 0.00001

34. In a class of 23 students, the girls were 7 more than the boys. How many boys were in the class?

A. 8
B. 15
C. 16
D. 30

35. Express 30 minutes as a percentage of 3 hours 20 minutes.

A. 12.5 %
B. 15 %
C. $16\frac{2}{3}$
D. 20 %

36. Find the Least Common Multiple (LCM) of 2, 3 and 5.

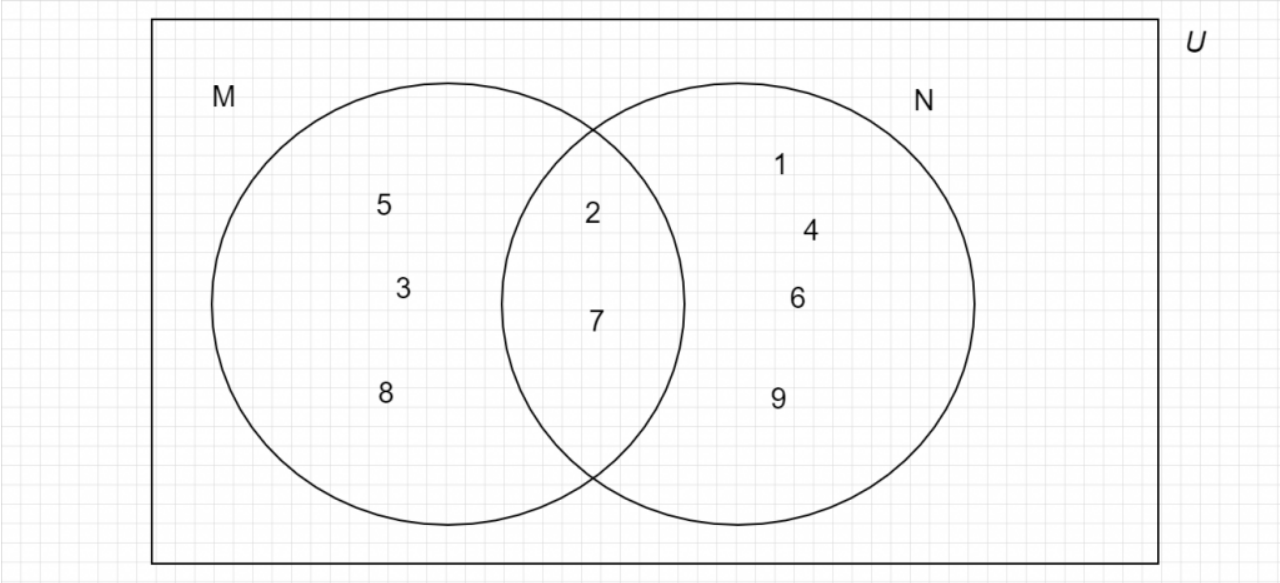
A. 6
B. 12
C. 24
D. 30

37. The simple interest on GH₵ 450.00 for 4 years is GH₵ 45.00, find the rate of interest.

A. 2.5 %
B. 10 %
C. 25 %
D. 6.5 %

38. Find the median of the following numbers: 46, 68, 34, 37, 76 and 81.

A. 35.5
B. 57
C. 67
D. 68



In the Venn diagram M and N are the subsets of the universal set U. Use this information to answer questions 39 and 40.

39. Find $M \cap N$.

A. {7}
B. {2,7}
C. {3,5,8}
D. {1,2,3,4,5,6,7,8,9}

40. How many members are om the set N?

A. 2
B. 3
C. 4
D. 6

Objectives Answer

1. D. {2,4,6,8,10,12}
2. C
3. D. – 2
4. 0.0246
5. D. 7^2
6. D. 4

7. C. 1
8. D. (k+2t)(x-4)
9. A. 2/5
10. D. 3/10
11. A
12. B. 4
13. D. y=-2x+5
14. C. 24.0 m
15. B. 1.5m
16. B. 060°
17. A. {y:y>5}
18. D. – 1
19. A. 36
20. B. 40°
21. B
22. C
23. D. 0.48
24. C. 28 cm
25. C. 28
26. A. 65°
27. C
28. A. GH₵ 22.50
29. A
30. D
31. C
32. C. 7904
33. C. 0.0001
34. A. 8
35. B. 15 %
36. D. 30
37. A. 2.5 %
38. B. 57
39. B. {2,7}
40. D. 6

2019 BECE Mathematics (Maths) Past Questions Paper Two

Share:

1. (a) Given that x = {whole numbers from 4 to 13} and y = {multiples of 3 between 2 and 20}, find .

(b) Find the Least Common Multiple (L.C.M) of the following numbers: 3, 5, and 9.

(c) If , find the value of $\frac{q}{p},\ where\ p \neq 0$.

2. (a) Solve: $\frac{4x+5}{5} + \frac{x-3}{4} = -1.$

(b) The ratio of boys to girls in a school is 12:25. If there are 120 boys.
(i) how many girls are in the school?
(ii) what is the total number of boys and girls in the school?

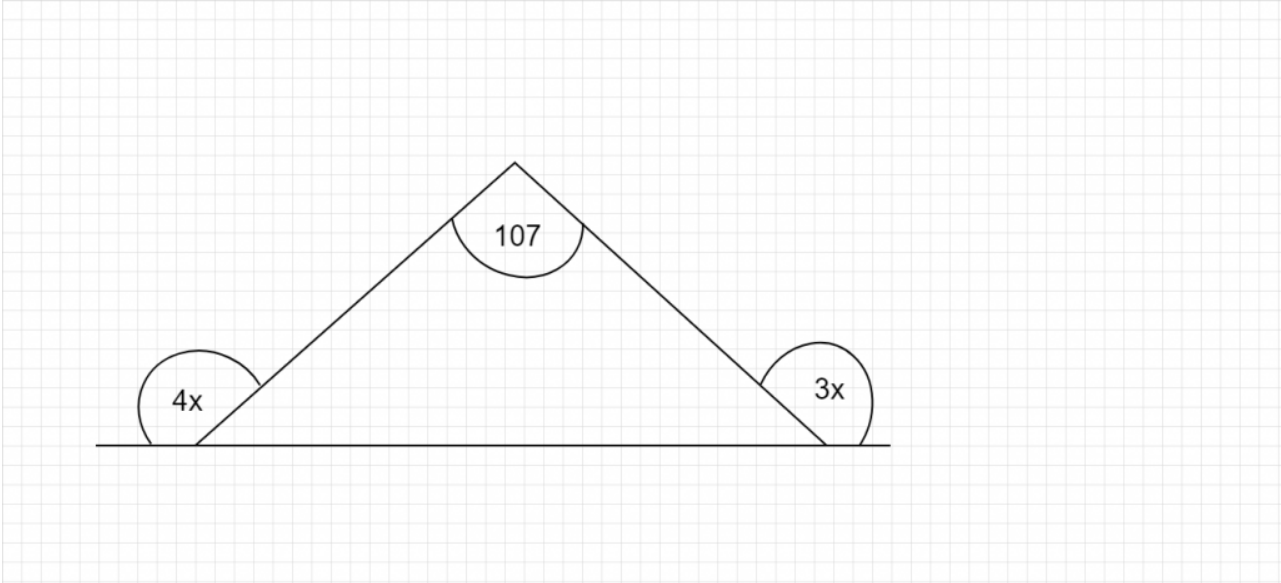
(c) Simplify: $(8x^2y^3)\ (\frac{3}{8}xy^4)$

3. (a) In an examination, 60 candidates passed Integrated Science or Mathematics. If 15 passed both
subjects and 9 more passed Mathematics than Integrated Science, find the:
(i) number of candidates who passed each subject
(ii) probability that a candidate passed exactly one subject.

(b) Factorize: xy+6x+3y+18.

4. (a) Express 250% as a fraction in its lowest term.

(b)



Use the diagram to find the value of x.

(c) Simplify: $2 \div \left(\frac{15}{64} + \frac{6}{7}\right)$

(d) if $q = \begin{pmatrix} 7 \\ -1 \end{pmatrix}$ and $r = \begin{pmatrix} 4 \\ -5 \end{pmatrix}$ and find (q + r)

5. (a)

x	1	2	3	4	5
↓	↓	↓	↓	↓	↓
y	0	3	6	9	12

The mapping shows the relationship between x and y.
using a scale of 2cm to 1unit on the x-axis and 2 cm to 2 units on the y-axis, draw two perpendicular axes 0x and 0y on a graph sheet for $1 \leq x \leq 5 and 0 \leq y \leq 14;$

plot the point for each ordered pair, $(x,\ y)$.
Join the points with a straight line;

Using the graph, find the gradient of the line in 5 (a)(iii);
Use the graph to find the equation of the line in 5 (a)(iii).

6. The marks obtained by students in a class test were

4 8 7 6 7
2 1 7 4 7
3 7 8 4 3
7 5 2 7 2
5 4 8 3 2

(a) construct a frequency distribution table for the data.

(b) Find the:
(i) mode of the distribution;
(ii) median mark of the test;
(iii) mean mark.

Paper 2 Answers

1. (a)
x = { 4,5,6,7,8,9,10,11,12,13}
y= {3,6,9,12,15,18}

$X \cap Y$ = {6,9,12}

(b) The LCM is the smallest positive number that all of the numbers divide into evenly.
We solve this question by;

1. List the prime factors of each number.
2. Multiply each factor the greatest number of times it occurs in either number.

Since 3 has no factors besides 1 and 3. 3 is a prime number
Since 5 has no factors besides 1 and 5. 5 is a prime number
9 has factors of 1,3 and 3^2.

The LCM of 3,5,9 is the result of multiplying all prime factors the greatest number of times they occur in either number.

The LCM of 3,5,9 is $3^2 \times 5 = 45.$

C.

$\frac{p+2q}{p} = \frac{7}{5}$,

simplifying

$p + 2q = \frac{7p}{5}$,

$5p + 10q = 7p$,

$10q = 7p - 5p$

$10q = 2p$

$\frac{q}{p} = \frac{2}{10}$

$\frac{q}{p} = \frac{1}{5}$

2. (a)
Find the LCM of 5 and 4 which is 20.
Multiply all terms by 20 and simplify
$\frac{4x+5}{5} + \frac{x-3}{4} = -1.$

$20 \times \frac{4x+5}{5} + 20 \times \frac{x-3}{4} = 20 \times -1$

$4 \times (4x + 5) + 5 \times (x - 3) = 20 \times -1$

16x+20+5x-15=-20

21x+5=-20

21x=-20-5

21x=-25

$x = -25_{\overline{21}}$

(b) (i)
Boys : Girls = 12:25,
If there are 120 boys,let x be the number of girls
120 boys : x girls
12:25 = 120: x

If more, less divides
Therefore
$x = \frac{25}{12} \times 120 = 250$

Hence there are 250 girls in the class

(ii) the total number of people in the school = Number of boys + number of girls
=250 + 120
=370

(c) Simplify: $\left(8x^2y^3\right)\left(\frac{3}{8}xy^4\right)$.

To solve, start by grouping exponential terms

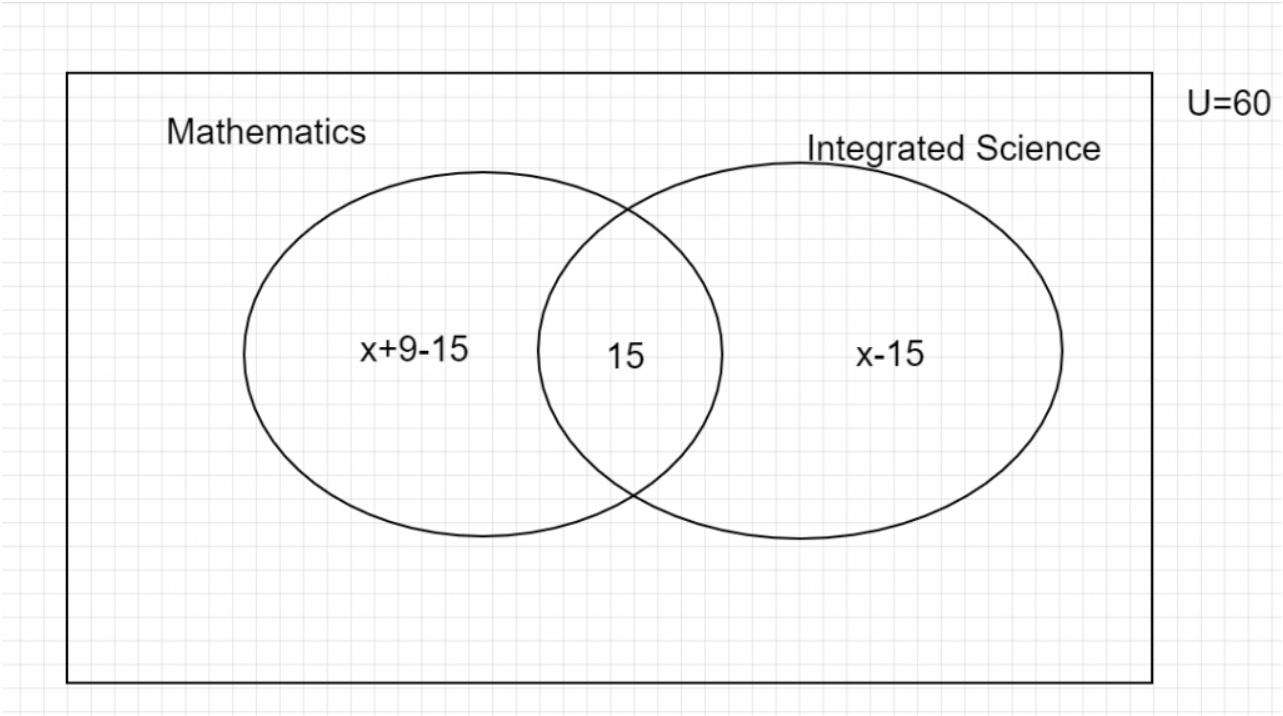
$(8 \times \frac{3}{8}) \cdot (x^2 \times x) \cdot (y^3 \times y^4)$

Simplifying..

$3x^3y^7$

Ques 3

(a) Let U be the universal set
X – Number of students who passed integrated science
Y – Number of students who passed Mathematics
Solving this question requires the use of venn diagrams.
From the informationtion given
X n Y = 15
9 more students passed mathematics than integrated science
Hence Y = x+9



Solving for x
x+9-15+15+x-15=60
2x-6=60
2x=66
X = 33

Number of students who passed math only = x+9-15 = 27

Number of students who passed science = 33-15 = 18

Probability of passing only one subject = (18+27)/60 = 3/4

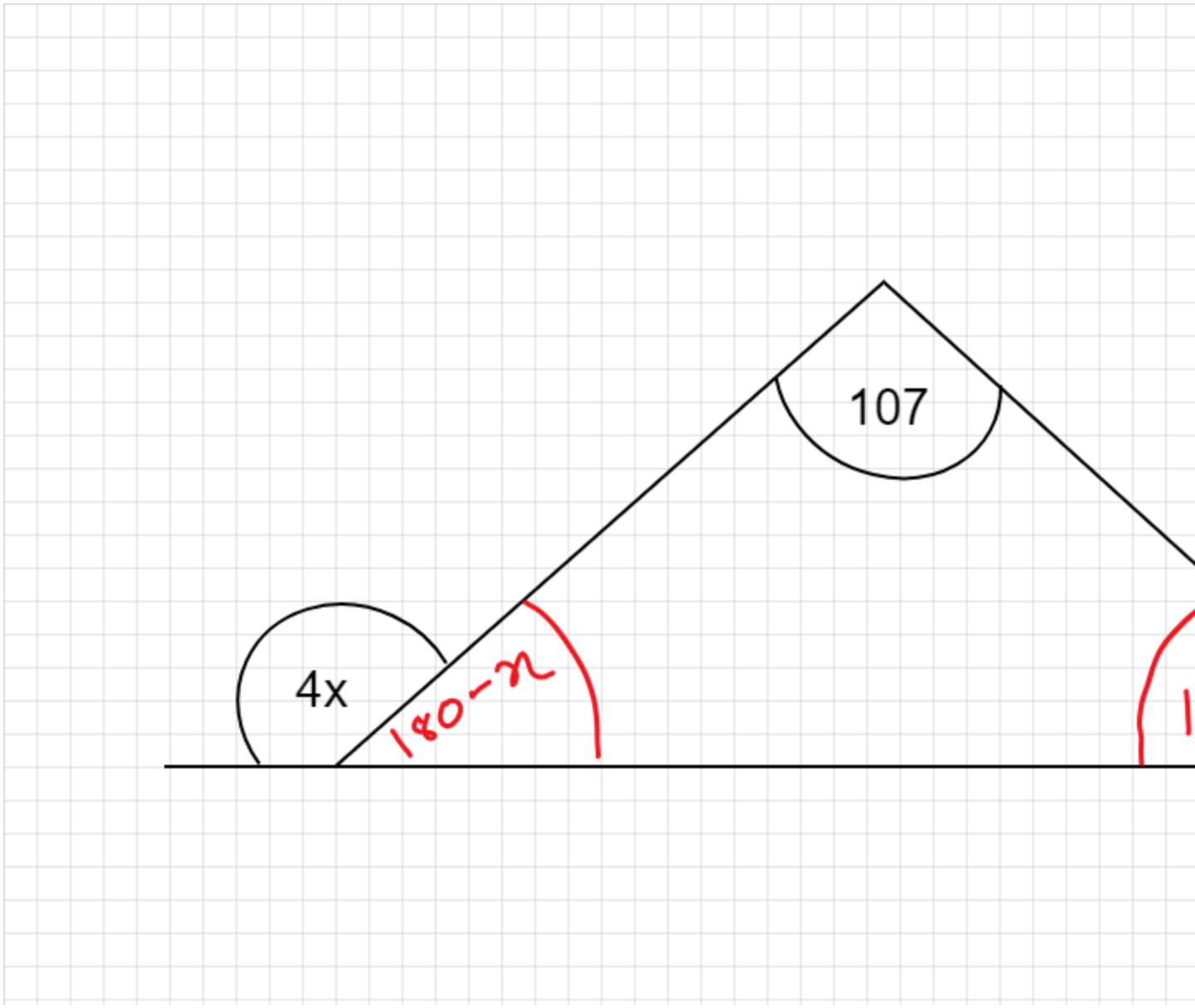
(b) Factorize: xy+6x+3y+18.

xy+6x+3y+18
x(y+6)+3(y+6)
(x+3)(y+6)

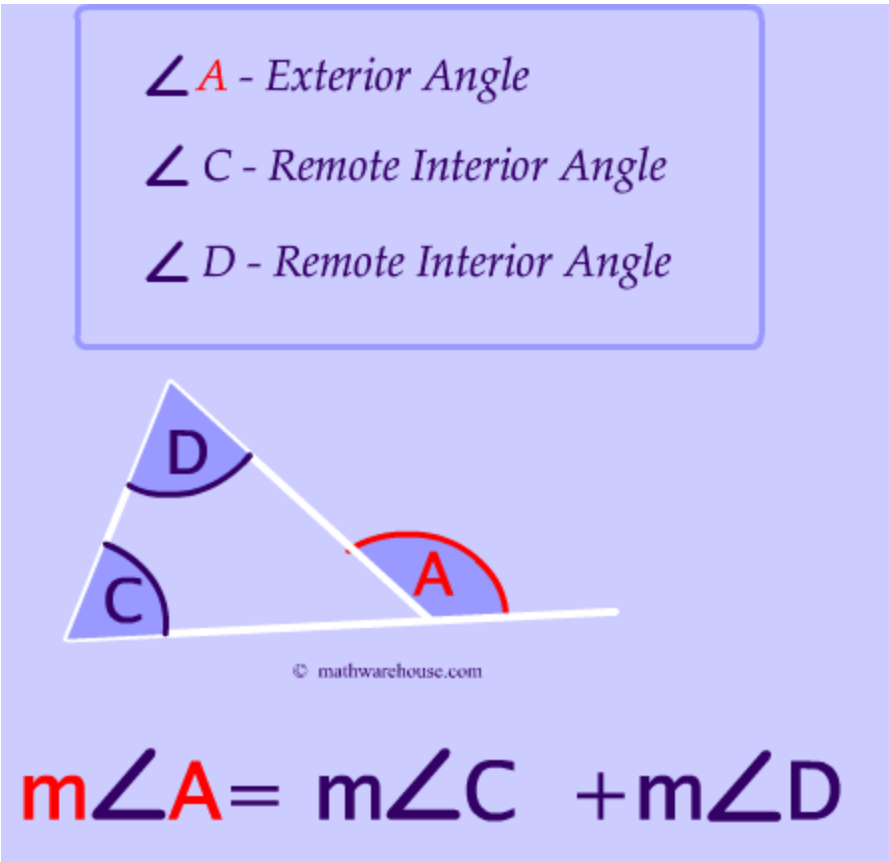
Ques. 4

a. 250% = $\frac{250}{100} = \frac{25}{10} = \frac{5}{2}$

b. Using the knowledge that angles on a straight-line sum to 180, write an equation for the missing internal angles



we solve this question by using a least known property of triangles shown in the image below.



Hence

$3x = (180 - 4x) + 107$

$7x = 287$

$\frac{7x}{7} = \frac{287}{7}$

$x = 41$

C.

$2 \div \left(\frac{15}{64} + \frac{6}{7}\right)$

simplifying the term in the brackets,by first finding the LCM of denominators

$2 \div \left(\frac{7(15)+64(6)}{448}\right)$

$2 \div \left(\frac{105+384}{448}\right)$

$2 \div \left(\frac{489}{448}\right)$

applying the fraction rule

$2 \times \left(\frac{448}{489}\right)$

$\left(\frac{896}{489}\right)$

$$q = \begin{pmatrix} 7 \\ -1 \end{pmatrix} r = \begin{pmatrix} 4 \\ -5 \end{pmatrix} and$$

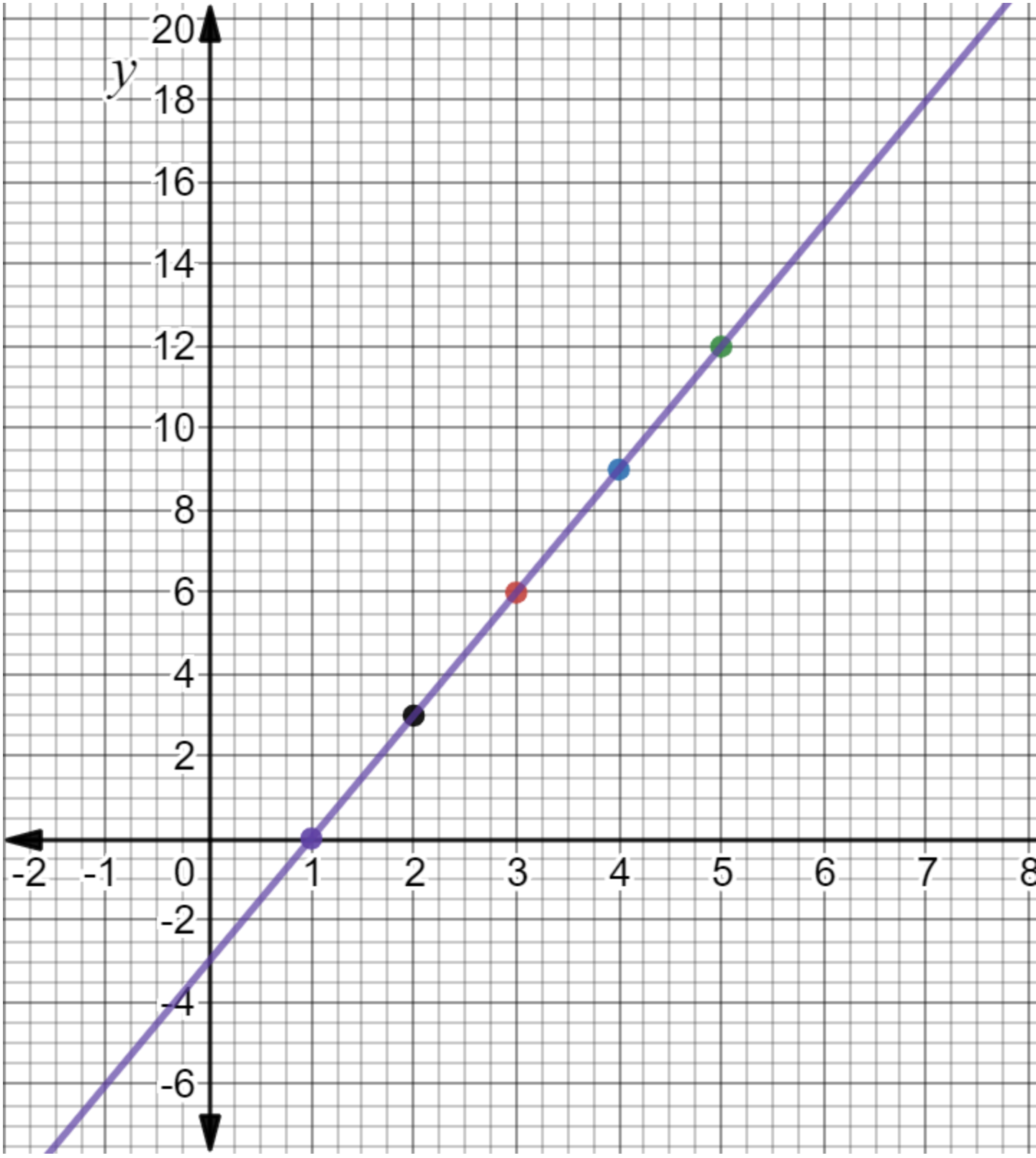
$$(q + r) = \begin{pmatrix} 7+4 \\ -1+(-5) \end{pmatrix}$$

$$(q + r) = \begin{pmatrix} 11 \\ -6) \end{pmatrix}$$

D.

Ques. 5

The relation is plotted on a graph sheet as shown below.



(iv) gradient

the gradient can be found from the graph using the formula below, choosing any 2 points on the

line
$= \frac{y_2 - y_1}{x_2 - x_1}$

$= \frac{12-0}{5-1} = \frac{12}{4} = 3$

Equation of a line is given as
Y = mx+Cw

Where m is the gradient
C is y intercept

From the graph the y intercept is -3

So the equation of the line

Y=3x-3

(b) Simplify: $32 \times 8 \times 4 \times 2$, leaving your answer in the form 2^n.

$32 = 2^5$

$8 = 2^3$

$4 = 2^2$

$2 = 2^1$

$32 \times 8 \times 4 \times 2 = 2^{5+3+2+1} = 2^11$

Ques. 6 (a).

Marks	**frequency**	**cumulative frequency**
1	1	1
2	4	5
3	3	8
4	4	12
5	2	14
6	1	15
7	7	22
8	3	25

(b) Find the:
(i) mode of the distribution = 7
(ii) median mark of the test = 5
(iii) mean mark = 4.92