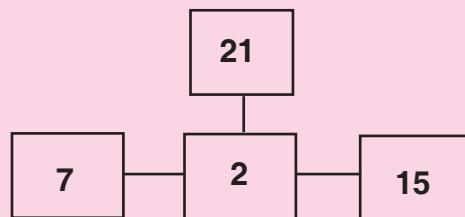
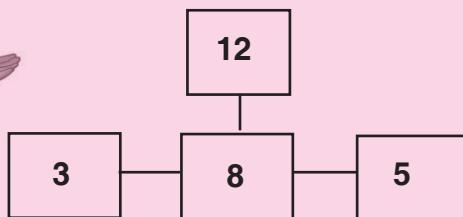
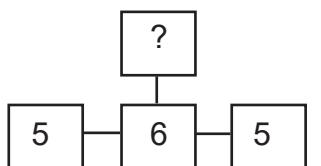


A. Example:

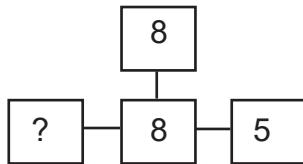


1.



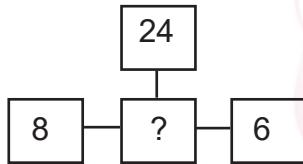
- A. 6 B. 16 C. 11
D. 15 E. 30

2.



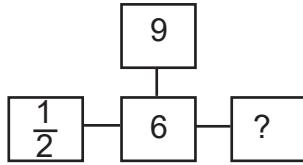
- A. 5 B. 16 C. 13
D. 4 E. 2

3.



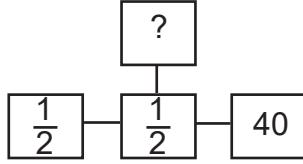
- A. 5 B. 30 C. 14
D. 38 E. 8

4.



- A. 15 B. 9 C. $\frac{1}{12}$
D. 45 E. 30

5.



- A. 1 B. 2 C. 5
D. 41 E. 8



B. Example:

3	2	2
8		

4	3	6
27		

1	2	3
5		

6.

5	6	7
---	---	---

 A. 72 B. 41 C. 47
D. 37 E. 21

7.

8	12	10
---	----	----

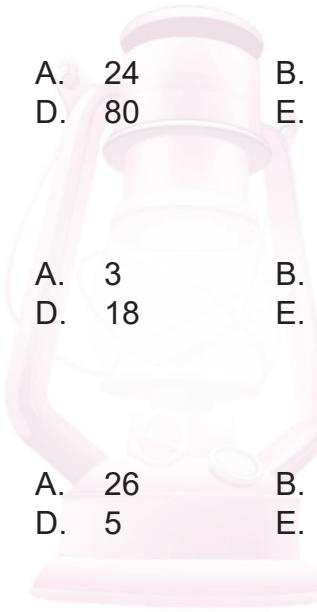
 A. 24 B. 120 C. 92
D. 80 E. 200

8.

3	<input type="text"/>	9
---	----------------------	---

 A. 3 B. 27 C. 36
D. 18 E. 54

30



9.

<input type="text"/>	15	11
----------------------	----	----

 A. 26 B. 54 C. 75
D. 5 E. 161

70

10.

6	5	<input type="text"/>
---	---	----------------------

 A. 22 B. 1 C. 2
D. 7 E. 11

11

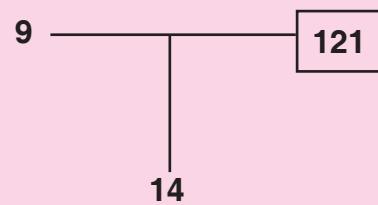
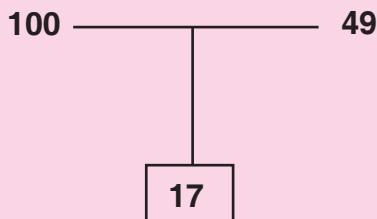
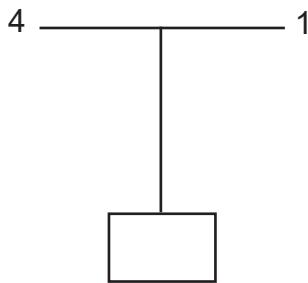


C. Example:

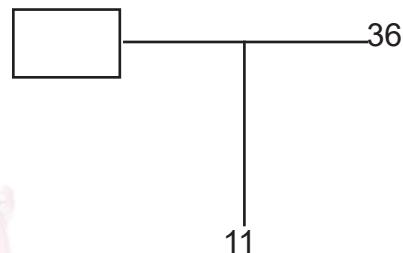
$$\begin{array}{cccc}
 & 9 & 1 & 5 \\
 4 & & & \\
 & 7 & 1 & 4 \\
 \hline
 3 & 3 & 2 & 3 \\
 \hline
 2 & 3 & 3 & 7 \\
 \hline
 1 & 3 & 1 & 2
 \end{array}$$

11. 7 4 1
 A. 3 B. 2 C. 1 D. 7 E. 5
12. 8 5 7
 A. 3 B. 2 C. 1 D. 7 E. 5
13. 1 5 4
 A. 3 B. 2 C. 1 D. 5 E. 7
14. 4 5 2
 A. 3 B. 2 C. 1 D. 5 E. 6
15. 5 2 5
 A. 3 B. 2 C. 1 D. 5 E. 6

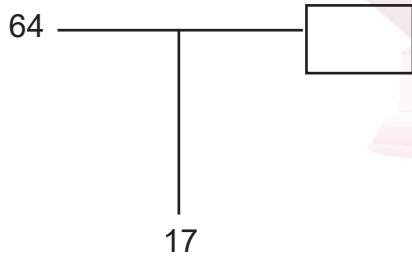


D. Example:**16.**

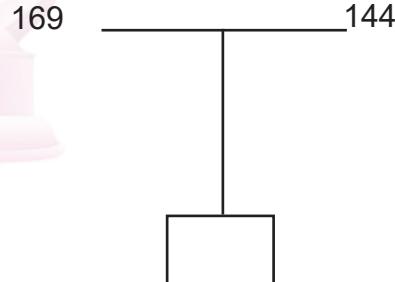
- A. 5 B. 3 C. 2
 D. 4 E. 1

18.

- A. 25 B. 64 C. 7
 D. 5 E. 49

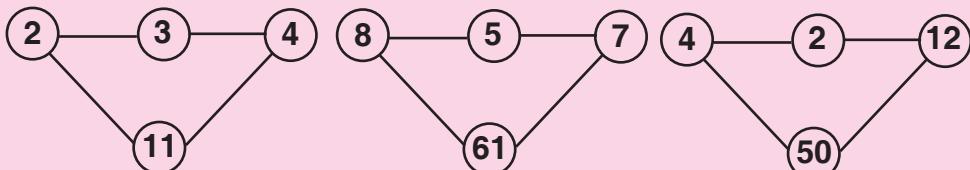
17.

- A. 8 B. 16 C. 17
 D. 49 E. 81

19.

- A. 25 B. 13 C. 17
 D. 12 E. 35



E. Example:

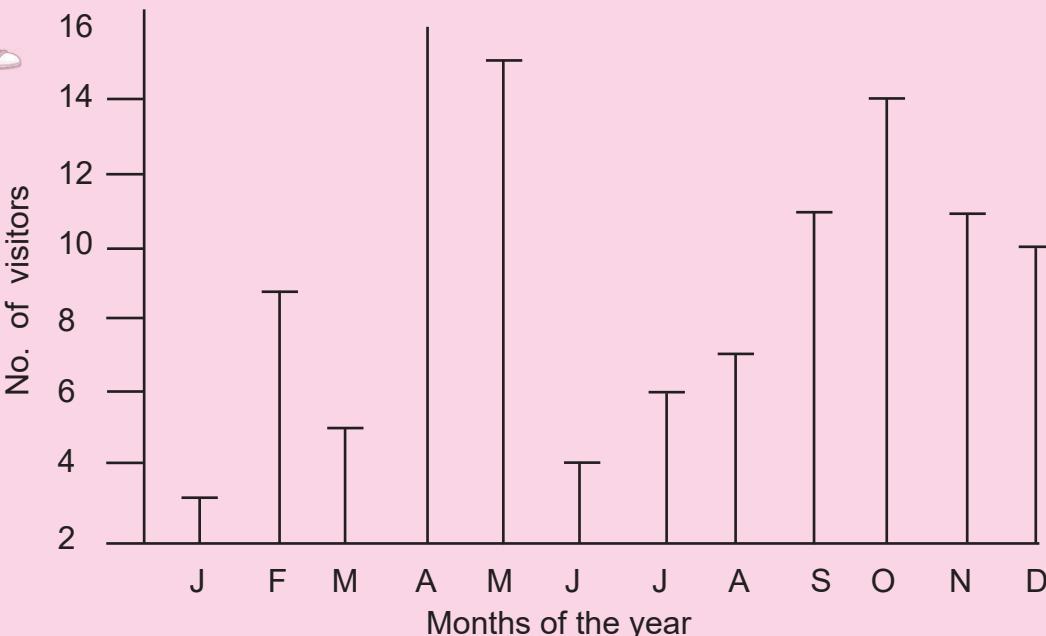
- 20.
- A. 7 B. 8 C. $\frac{1}{4}$
D. 12 E. 21
- 21.
- A. 22 B. 39 C. 52
D. 70 E. 72
- 22.
- A. 0 B. 1 C. 6
D. 12 E. 24
- 23.
- A. $\frac{1}{6}$ B. $\frac{1}{9}$ C. 3
D. $\frac{1}{3}$ E. 36
- 24.
- A. 17 B. 72 C. 100
D. 200 E. 144





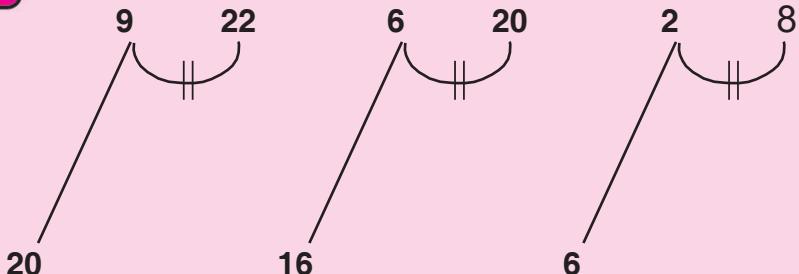
F. Example:

Study the graph below about the number of visitors that came to a house in 12 months, and use this to answer questions 25 - 29.

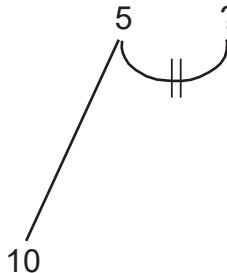


25. How many visitors came to the house in September?
A. 9 B. 10 C. 11 D. 13 E. 12
26. How many visitors altogether came in the months of March and May?
A. 5 B. 15 C. 20 D. 25 E. 30
27. Which two months have the same number of visitors?
A. February and August B. September and November
C. February and December D. May and October
E. April and October
28. How many visitors came throughout the year?
A. 100 B. 95 C. 105 D. 111 E. 109
29. What was the total for the first half of the year?
A. 48 B. 47 C. 49 D. 46 E. 52



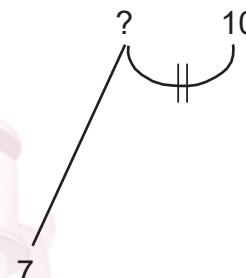
G. Example:

30.



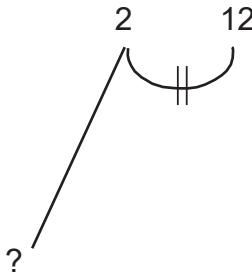
- A. 5
B. 10
C. 20
D. 5
E. 25

33.



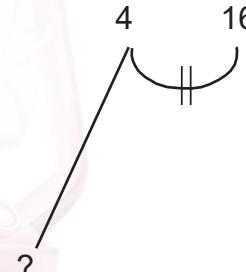
- A. 1
B. 3
C. 2
D. 5
E. 4

31.



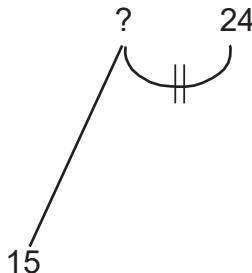
- A. 6
B. 8
C. 4
D. 2
E. 10

34.



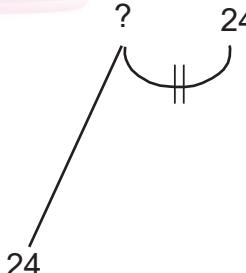
- A. 14
B. 10
C. 8
D. 12
E. 18

32.



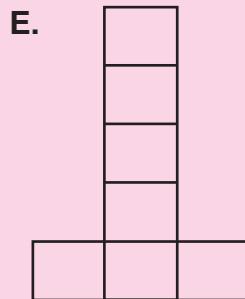
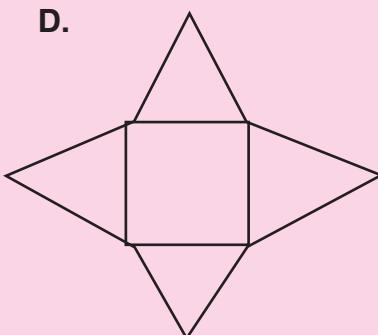
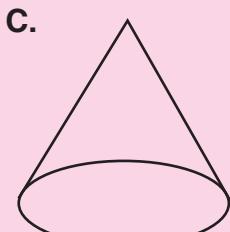
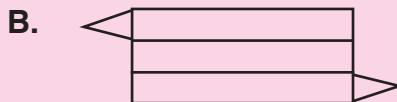
- A. 6
B. 3
C. 9
D. 7
E. 12

35.



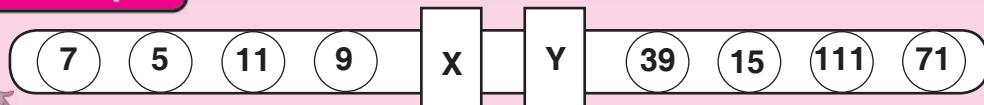
- A. 6
B. 3
C. 9
D. 7
E. 12



H. Example:

- 36.** Which is the net of a cone?
A. B. C. D. E.
- 37.** Which is the net of a triangular prism?
A. B. C. D. E.
- 38.** Which is the net of an open cylinder?
A. B. C. D. E.
- 39.** Which is the net of a cube?
A. B. C. D. E.
- 40.** Which is the net of a pyramid on a square base?
A. B. C. D. E.



A. Example:

1. 
4, 5, 7, 8, X, Y,
2. 
10, 12, 11, 9, X, Y,
3. 
20, 15, 13, 6, X, Y,
4. 
17, 16, 14, 18, X, Y,
5. 
21, 30, 25, 40, X, Y,





B. Example:

Study the table below and use it to answer questions 6 - 10:

@	1	2	3	4	5
1	1	2	3	0	1
2	2	0	K	0	2
3	G	2	1	0	S
4	0	0	0	0	0
5	T	2	R	0	1

6. What number does G represent?
A. 0 B. 1 C. 2 D. 3 E. 4
7. What does S stand for?
A. 3 B. 2 C. 1 D. 0 E. 5
8. What number does R represent?
A. 1 B. 0 C. 2 D. 3 E. 6
9. What is the sum of T and K?
A. 2 B. 1 C. 3 D. 4 E. 5
10. What number does K represent?
A. 1 B. 0 C. 2 D. 3 E. 4

C. Example:



$$4 \uparrow 3 = 12 \quad 16 \downarrow 4 = 4 \quad 9 \uparrow 6 \downarrow 2 = 27$$

11. $\boxed{?} \downarrow 4 = 16$
A. 16 B. 62 C. 64 D. 56 E. 36



12. $5 \uparrow$ $\boxed{?}$ \uparrow $3 = 60$
 A. 8 B. 5 C. 4 D. 6 E. 7
13. $8 \uparrow$ $\boxed{?}$ $= 24$
 A. 3 B. 5 C. 14 D. 26 E. 13
14. $70 \downarrow$ $\boxed{?}$ $\uparrow 10 = 100$
 A. 0 B. 15 C. 6 D. 7 E. 8
15. $9 \uparrow$ $3 \downarrow$ $\boxed{?} = 3$
 A. 14 B. 32 C. 24 D. 27 E. 9

D. Example:

$$\begin{aligned}
 Q &= -3 \\
 R &= x3 \\
 Q * R &= -3 \times 3 \\
 (15Q)R &= (15 - 3) \times 3 = 36
 \end{aligned}$$

16. Find $(12Q)R$. A. 9 B. 27 C. 25 D. 36 E. 12
17. Find $(30Q)R$. A. 25 B. 27 C. 68 D. 81 E. 72
18. Find $(4Q)R$. A. 3 B. 13 C. 1 D. 12 E. 4
19. Find $(17Q)R$. A. 63 B. 24 C. 14 D. 42 E. 40
20. Find $(60Q)R$. A. 117 B. 171 C. 82 D. 94 E. 85



E. Example:

$$2 \boxed{\quad} 4 = \frac{8}{10} \quad 4 \boxed{\quad} 3 = \frac{12}{16} \quad 6 \boxed{\quad} 5 = \frac{30}{36}$$

21. $4 \boxed{\quad} 4 = ?$

- A. $\frac{9}{14}$ B. $\frac{8}{12}$ C. $\frac{16}{20}$ D. $\frac{10}{15}$ E. $\frac{16}{18}$

22. $? \boxed{\quad} 3 = \frac{15}{20}$ A. 9 B. 12 C. 7 D. 5 E. 0

23. $9 \boxed{\quad} 4 = \frac{?}{45}$ A. 16 B. 45 C. 19 D. 36 E. 14

24. $5 \boxed{\quad} 5 = \frac{?}{30}$ A. 35 B. 30 C. 25 D. 28 E. 36

25. $8 \boxed{\quad} ? = \frac{32}{40}$ A. 3 B. 5 C. 6 D. 4 E. 2

F. Example:

$$S_1 = 1$$

$$S_2 = 1 + 2 = 3$$

$$S_3 = 1 + 2 + 3 = 6$$

$$S_4 = 1 + 2 + 3 + 4 = 10$$

26. $S_5 = \underline{\hspace{2cm}}$. A. 16 B. 17 C. 24 D. 20 E. 15

27. $S_8 = \underline{\hspace{2cm}}$. A. 32 B. 35 C. 36 D. 20 E. 15

28. $S_{12} - S_8 = \underline{\hspace{2cm}}$. A. 36 B. 66 C. 55 D. 42 E. 28

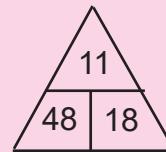
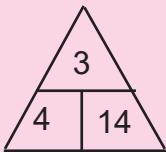
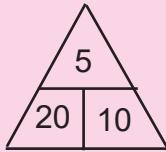
29. $S_{15} + S_3 = \underline{\hspace{2cm}}$. A. 104 B. 126 C. 120 D. 132 E. 150



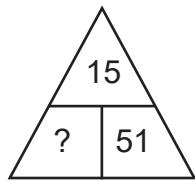
30. $\frac{S9}{S10} = \underline{\hspace{2cm}}$

- A. $\frac{25}{32}$ B. $\frac{45}{50}$ C. $\frac{45}{55}$ D. $\frac{52}{32}$ E. $\frac{40}{24}$

G. Example:

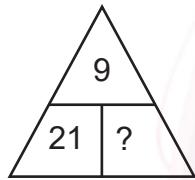


31.



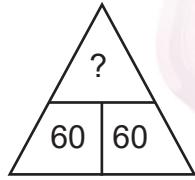
- A. 60 B. 72 C. 84
D. 39 E. 66

32.



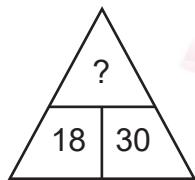
- A. 47 B. 33 C. 62
D. 30 E. 12

33.



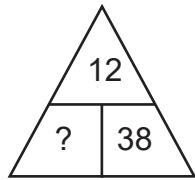
- A. 30 B. 180 C. 120
D. 60 E. 20

34.



- A. 48 B. 24 C. 8
D. 64 E. 12

35.



- A. 76 B. 34 C. 50
D. 68 E. 64



H. Example:

1	28	8	90	11	7
2	36	7	78	12	11
3	44	6	66	13	15
4	52	5	54	14	19
		4	42	15	23
		3	30		

36.

1	77	A. 56
2	70	B. 50
3	63	C. 52
4	<input type="text"/>	D. 54
5	49	E. 5.8
6	42	

39.

12	168	A. 126
11	154	B. 136
10	140	C. 116
9	<input type="text"/>	D. 128
		E. 118

37.

6	44	A. 46
5	55	B. 36
4	<input type="text"/>	C. 66
3	77	D. 76
2	88	E. 77
1	99	

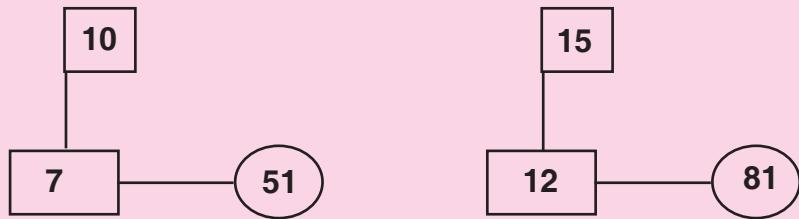
40.

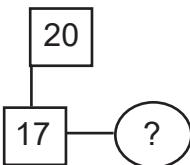
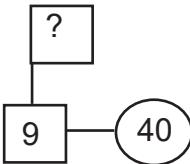
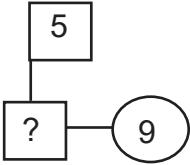
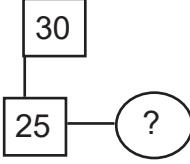
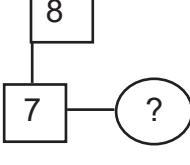
2	32	A. 70
3	48	B. 80
4	64	C. 82
5	<input type="text"/>	D. 90
		E. 92

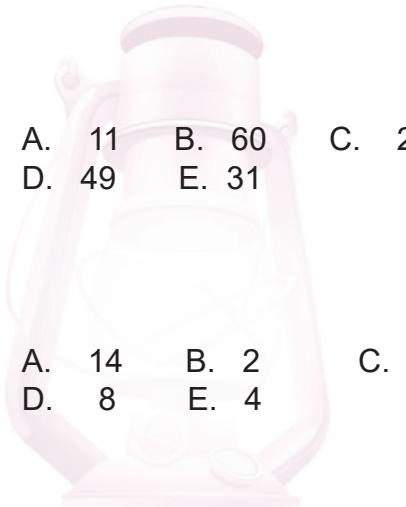
38.

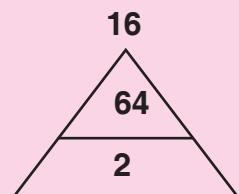
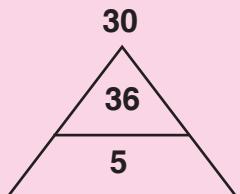
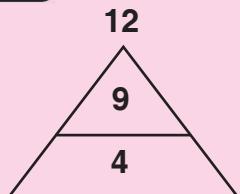
2	10	A. 13
3	15	B. 11
5	25	C. 12
8	40	D. 15
	75	E. 14
<input type="text"/>		



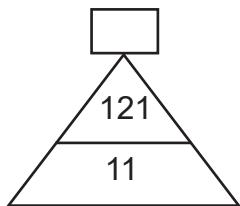
A. Example:

1.  A. 69 B. 37 C. 110
D. 74 E. 400
2.  A. 11 B. 60 C. 22
D. 49 E. 31
3.  A. 14 B. 2 C. 3
D. 8 E. 4
4.  A. 650 B. 750 C. 55
D. 5 E. 275
5.  A. 15 B. 0 C. 25
D. 1 E. 30



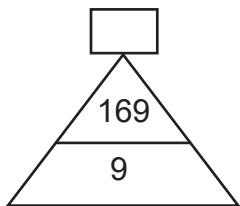
B. Example:

6.



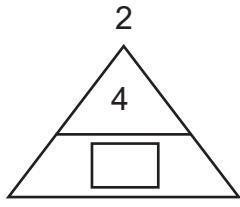
- A. 121
B. 34
C. 11
D. 22
E. 10

8.



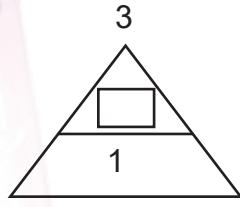
- A. 178
B. 117
C. 172
D. 45
E. 56

7.

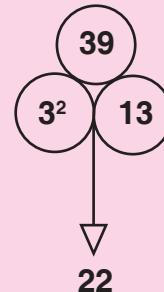
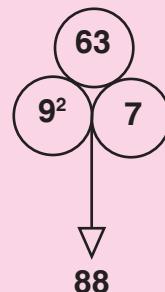
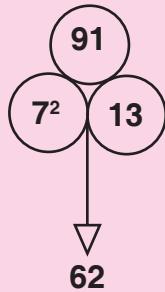


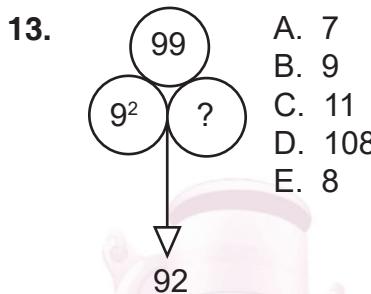
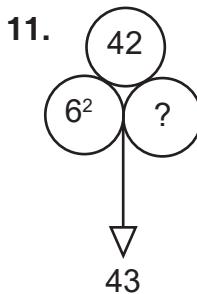
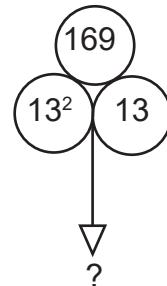
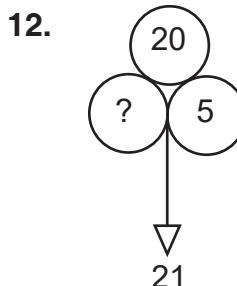
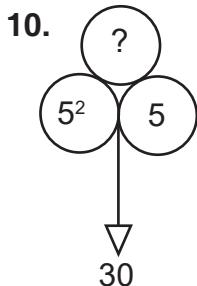
- A. 2
B. $\frac{1}{4}$
C. 8
D. $\frac{1}{2}$
E. 1

9.



- A. 3
B. 2
C. 10
D. 4
E. 9

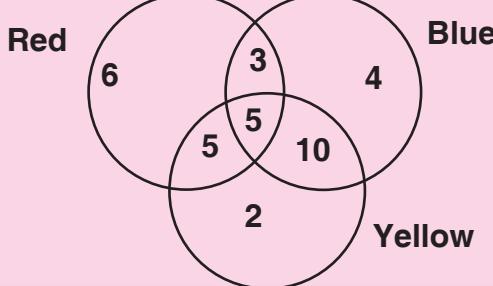
C. Example:



A basket contains 35 red, blue and yellow balls and various combinations of the three colours.

D. Use the diagram below to answer questions 10 - 24:

D. Example:



15. How many balls have only two colours?
 A. 18 B. 16 C. 17 D. 13 E. 15
16. How many balls have all the three colours?
 A. 4 B. 10 C. 6 D. 5 E. 8



17. How many balls have blue colour?
A. 17 B. 14 C. 22 D. 4 E. 7
18. How many balls have only one colour?
A. 12 B. 10 C. 14 D. 35 E. 30
19. How many balls have at least two colours?
A. 18 B. 22 C. 20 D. 30 E. 23

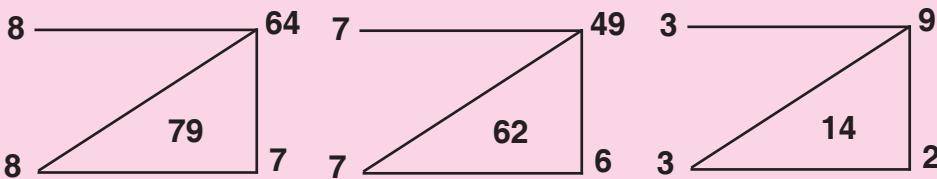
E. Example:

$$7 \text{ w } 4 = \frac{11}{2} = 5 \frac{1}{2}$$

$$8 \text{ w } 6 = \frac{14}{2} = 7$$

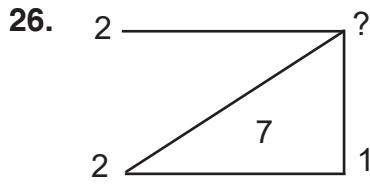
$$9 \text{ w } 7 = \frac{16}{2} = 8$$

20. ? W 6 = 7 A. 6 B. 5 C. 7 D. 8 E. 10
21. 16 W ? = 10 A. 6 B. 12 C. 4 D. 7 E. 10
22. 12 W 12 = ? A. 11 B. 12 C. 10 D. 14 E. 13
23. ? W 3 = 7 A. 11 B. 14 C. 15 D. 18 E. 19

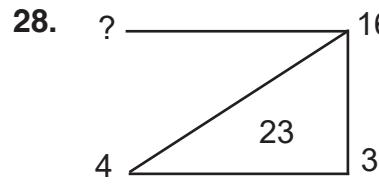
F. Example:

24. 5 ————— 25 A. 2
B. 4
C. 0
D. 3
E. 1
25. 6 ————— 36 A. 47
B. 42
C. 53
D. 40
E. 72

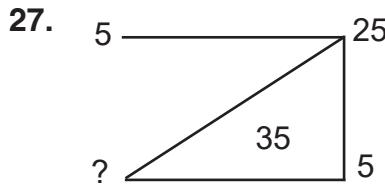




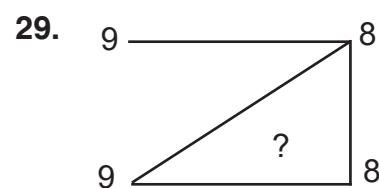
- A. 7
B. 10
C. 11
D. 4
E. 9



- A. 6
B. 4
C. 8
D. 5
E. 2

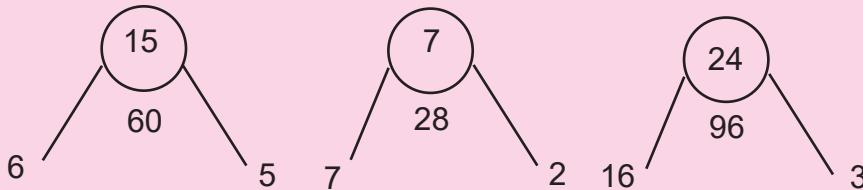


- A. 10
B. 7
C. 11
D. 9
E. 5

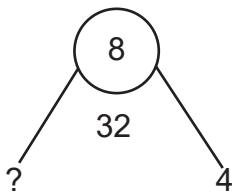


- A. 89
B. 98
C. 53
D. 46
E. 72

G. Example:

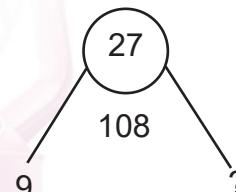


30.



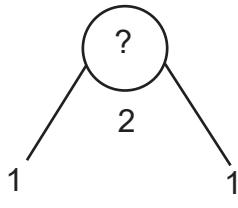
- A. 32
B. 16
C. 4
D. 18
E. 12

32.



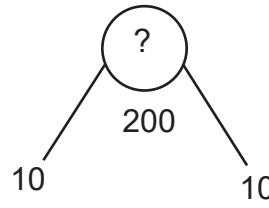
- A. 3
B. 54
C. 36
D. 44
E. 6

31



- A. $\frac{1}{2}$
B. $1\frac{1}{2}$
C. 2
D. 0
E. $\frac{1}{2}$

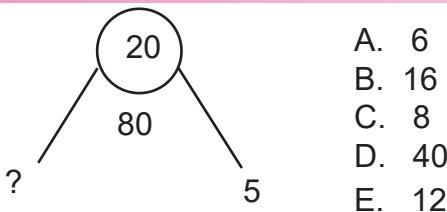
33.



- A. 20
B. 80
C. 50
D. 1
E. 100



34.



- A. 6
B. 16
C. 8
D. 40
E. 12

H. Example:

$$3 \text{ q } 4 = 12$$

$$4 \text{ b } 8 = \frac{1}{2}$$

$$6 \text{ b } 2 = 3$$

$$2 \text{ q } 1 \text{ b } 4 \text{ q } 4 = 2$$

35. $5 \text{ q } \boxed{\quad} = 15$

- A. 2 B. 3 C. 5 D. 10 E. 20

36. $6 \text{ q } 2 \text{ b } 2 = \boxed{\quad}$

- A. $\frac{1}{2}$ B. 2 C. 6 D. 10 E. 24

37. $\boxed{\quad} \text{ b } 4 = 8$

- A. 2 B. 4 C. 12 D. 16 E. 32

38. $\boxed{\quad} \text{ q } 4 = 40$

- A. 10 B. 3 C. 7 D. 5 E. 6

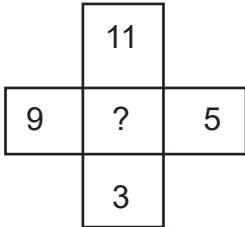
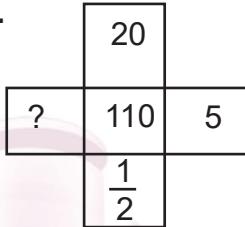
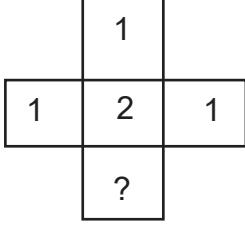
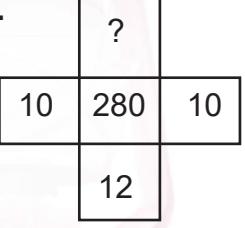
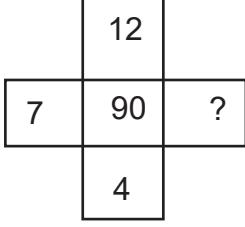
39. $30 \text{ b } \boxed{\quad} = 15$

- A. 2 B. 5 C. 10 D. 6 E. 3



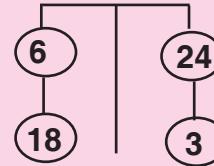
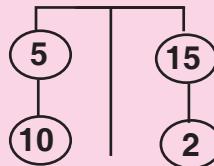
A. Example:

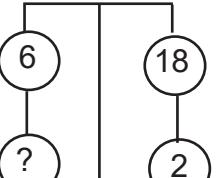
	3			7		
8	31	2		4	55	12
	5			1		

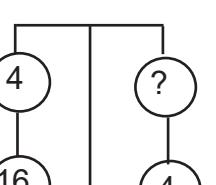
1. 
 A. 28 B. 78 C. 99 D. 35 E. 160
4. 
 A. 25 B. 40 C. $\frac{1}{4}$ D. 20 E. 135
2. 
 A. 0 B. 2 C. 3 D. 1 E. 5
5. 
 A. 15 B. 22 C. 32 D. 100 E. 300
3. 
 A. 23 B. 11 C. 6 D. 19 E. 106

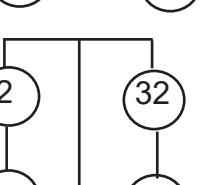


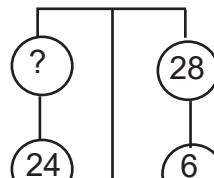
B. Example:

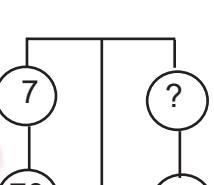


6. 
A. 14
B. 22
C. 18
D. 15
E. 12

7. 
A. 18
B. 26
C. 16
D. 14
E. 20

8. 
A. 20
B. 40
C. 16
D. 32
E. 15

9. 
A. 6
B. 4
C. 8
D. 10
E. 12

10. 
A. 50
B. 120
C. 65
D. 77
E. 40

C. Complete these:

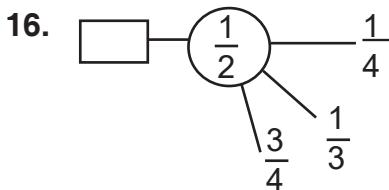
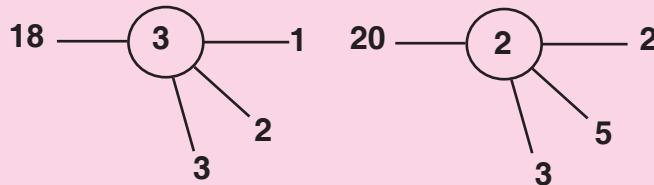
11. $(0, 3) (3, 6) (6, 9) (\quad)$.
A. 10, 12 B. 9, 12 C. 13, 14
D. 10, 13 E. 9, 11

12. $(8, 16) (16, 32) (32, 64) (\quad)$.
A. 64, 128 B. 64, 126 C. 64, 77
D. 64, 108 E. 64, 120

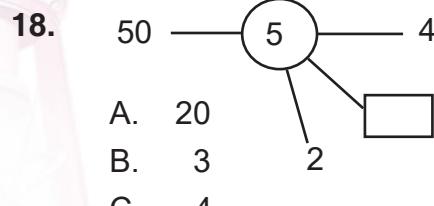
13. $54, 50, 46, 42, (\), (\)$.
A. 40, 42 B. 46, 50 C. 34, 38
D. 40, 38 E. 38, 34



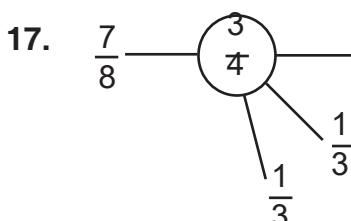
14. 3, 5, 6, 8, 9, 11, 12, (), ().
- A. 14, 15 B. 14, 16, C. 15, 16
 D. 13, 14 E. 12, 15
15. 1, 4, 5, 6, 9, 10, 11, 14, 15, 16, 19, 20, 21, (), ().
- A. 22, 23 B. 23, 24 C. 24, 26
 D. 24, 25 E. 22, 25

D. Example:

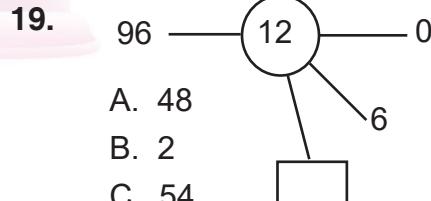
- A. $\frac{1}{4}$
 B. $\frac{1}{2}$
 C. 4
 D. $\frac{2}{3}$
 E. $2\frac{1}{2}$



- A. 20
 B. 3
 C. 4
 D. 60
 E. 100

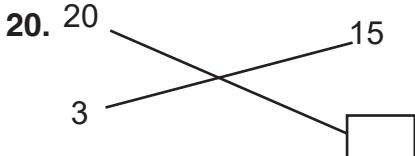
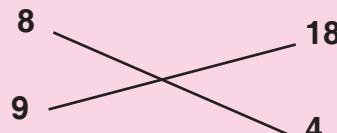
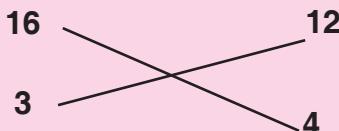


- A. $\frac{1}{2}$
 B. $\frac{5}{8}$
 C. $\frac{13}{4}$
 D. $7\frac{1}{6}$
 E. $1\frac{1}{4}$

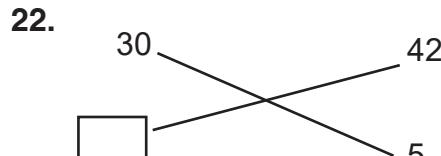


- A. 48
 B. 2
 C. 54
 D. 8
 E. 0

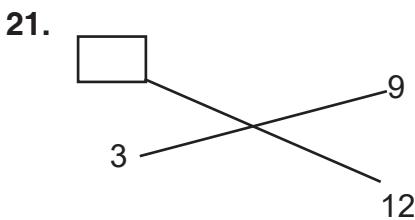


E. Example:

- A. 36
B. 32
C. 8
D. 4
E. 48



- A. 12
B. 37
C. 6
D. 25
E. 7



- A. 15
B. 36
C. 27
D. 4
E. 72

F. Example:

If $\frac{2}{10/7} = (10 \div 2) \times 7$

23. Find the value of $\frac{4}{20/19}$
A. 75 B. 95 C. 43 D. 96 E. 85

24. Find the value of $\frac{4}{72/2}$
A. $9\frac{3}{5}$ B. $77\frac{1}{2}$ C. 36 D. 86 E. $34\frac{2}{3}$

25. If $\frac{*}{49/11} = 77$, what is * ?
A. 28 B. 24 C. 10 D. 7 E. 6



26. If $\frac{13}{*/2} = 18$, what is *?
- A. 117 B. 127 C. 31 D. 45 E. 68
27. Find the value of $\frac{3}{210/0.7}$
- A. 59 B. 49 C. 29 D. 39 E. 50

G. Example:

$$4 \times \boxed{\quad} = 48 \div 2 \longrightarrow 4 \times \boxed{6} = 48 \div 2$$

28. $5 \times \boxed{\quad} = 80 \div 2$ A. 8 B. 7 C. 6 D. 5
E. 4
29. $\frac{1}{4}$ of ₦2.40 = $\boxed{\quad}$ A. 23k B. 40k C. 60k
D. 1.10k E. 80k
30. $5 \times \boxed{\quad} = 100 - 35$ A. 15 B. 13 C. 17
D. 65 E. 12
31. $7 \times \boxed{\quad} = 168 \div 4$ A. 5 B. 10 C. 6
D. 7 E. 9
32. ₦2.50 = $5 \times \boxed{\quad}$ A. ₦1.50 B. 60k C. 2.50k
D. 50k E. 70k

H. Example:

$$9 \boxed{\quad} 1 \boxed{\quad} 2 = 12 \longrightarrow 9 + 1 + 2 = 12$$

33. $12 \boxed{\quad} 5 \boxed{\quad} 2 = 9$
A. $\div -$ B. $- +$ C. $+ +$ D. $- -$ E. $+ \div$

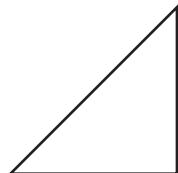


34. $5 \boxed{?} 5 \boxed{?} 5 = 15$
 A. - - B. - + C. x ÷ D. - + E. + +

35. $20 \boxed{?} 7 \boxed{?} 12 = 25$
 A. ++ B. - - C. x ÷ D. - + E. + -

36. $35 \boxed{?} 25 \boxed{?} 60 = 70$
 A. - - B. - + C. + + D. ÷ - E. + -

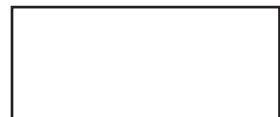
37. $42 \boxed{?} 6 \boxed{?} 9 = 16$
 A. ÷ + B. + ÷ C. - x D. + + E. - +



Corn



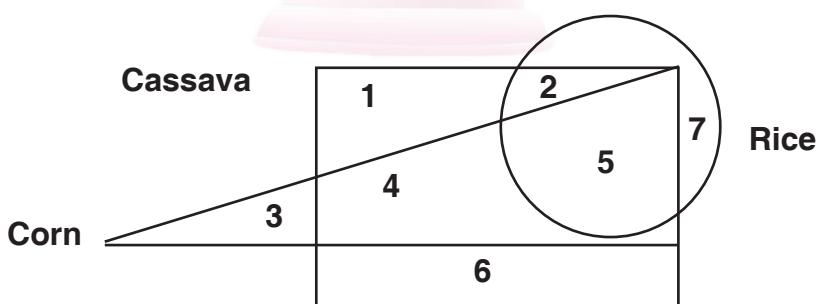
Rice



Cassava

The above diagrams represent farmers in a village who grow certain crops. Below they have been put together to form seven portions labelled 1-7.

I. Use the diagrams to answer questions 38 - 40:



38. What portion represents farmers who grow rice but not corn or cassava?
A. 2 B. 7 C. 5 D. 6 E. 4
39. What portions represent farmers who grow cassava but not corn or rice?
A. 1 and 6 B. 1 and 4 C. 2 and 6 D. 1 and 3 E. 3 and 6
40. What portion represents farmers who grow both cassava and corn but not rice?
A. 2 B. 5 C. 3 D. 6 E. 4

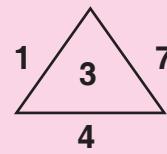
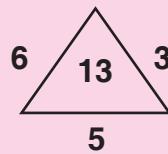
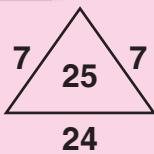


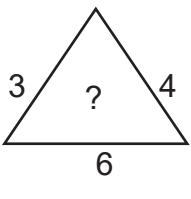
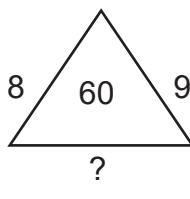
A. Example:

$$36 \text{ Q } 4 = (36 - 3) \div 6 = 5\frac{1}{2}$$

$$54 \text{ Q } 9 = (54 - 8) \div 4 = 11\frac{1}{2}$$

1. Find $86 \text{ Q } 5$
 A. $13\frac{1}{2}$ B. $13\frac{2}{3}$ C. $13\frac{3}{4}$ D. $14\frac{1}{3}$ E. $12\frac{3}{4}$
2. Find $65 \text{ Q } 1$
 A. 66 B. 13 C. $32\frac{1}{2}$ D. $13\frac{1}{2}$ E. 15
3. If $38Q^* = (38 - 6) \div 8$, what is *?
 A. 4 B. 6 C. 3 D. 5 E. 7
4. $72 \text{ Q } 8 = (72 - a) \div 2$ what is a ?
 A. 9 B. 64 C. 7 D. 1 E. 8

B. Example:

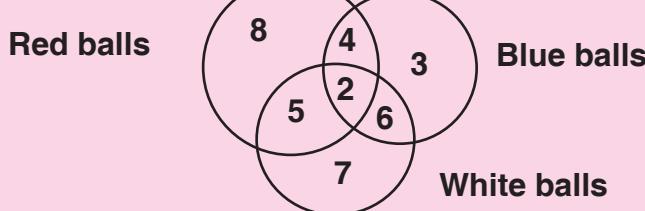
5. 
 A. 6
 B. 3
 C. 5
 D. 2
 E. 4
6. 
 A. 12
 B. 8
 C. 9
 D. 14
 E. 3



7. A. 2 B. $1\frac{2}{3}$ C. 12 D. 14 E. 10
9. A. 4 B. 30 C. 10 D. 3 E. 5
8. A. 14 B. 28 C. 7 D. 27 E. 21

C. Study the venn diagram below:

C. Example:



10. How many balls have only white?
A. 8 B. 3 C. 6 D. 7 E. 4
11. How many balls have red?
A. 19 B. 17 C. 7 D. 88 E. 12
12. How many balls have both blue and white only?
A. 8 B. 4 C. 6 D. 7 E. 3
13. How many balls are there altogether?
A. 32 B. 36 C. 37 D. 35 E. 38
14. How many balls have only one colour?
A. 8 B. 3 C. 7 D. 18 E. 15



D. Example:

$$\begin{array}{rccccc} 4 & \xrightarrow{\hspace{1cm}} & 2 & = & 10 \\ 6 & \xrightarrow{\hspace{1cm}} & 3 & = & 15 \\ 2 & \xleftarrow{\hspace{1cm}} & 5 & = & 8 \end{array}$$

15. $? \xrightarrow{\hspace{1cm}} 6 = 16$
A. 4 B. 3 C. 5 D. 2 E. 6
16. $8 \xrightarrow{\hspace{1cm}} 8 = ?$
A. 24 B. 16 C. 28 D. 20 E. 8
17. $3 \xleftarrow{\hspace{1cm}} ? = 9$
A. 5 B. 6 C. 4 D. 7 E. 9
18. $4 \xrightarrow{\hspace{1cm}} 3 = ?$
A. 11 B. 12 C. 16 D. 9 E. 7
19. $? \xleftarrow{\hspace{1cm}} 9 = 13$
A. 2 B. 4 C. 3 D. 6 E. 5

E. Example:

$$3 \dots = 6 \quad 2 \dots = 6 \quad 5 \dots = 20$$

20. $3\dots = ?$
A. 6 B. 9 C. 8 D. 12 E. 15
21. $5\dots = ?$
A. 7 B. 20 C. 10 D. 17 E. 15
22. $? \dots = 30$
A. 4 B. 3 C. 7 D. 5 E. 6
23. $7 \ ? = 28$
A. B. C. ... D. ... E.
24. $8 \dots = ?$
A. 23 B. 24 C. 40 D. 32 E. 16



F. Example:

15	4	1	3
1	2	0	$\frac{1}{2}$
48	3	5	6

25.

<input type="text"/>	4	4	8
----------------------	---	---	---

 A. 32 B. 16 C. 64
D. 0 E. 20
26.

33	6	5	<input type="text"/>
----	---	---	----------------------

 A. 22 B. 30 C. 41
D. 3 E. 5
27.

168	2	<input type="text"/>	24
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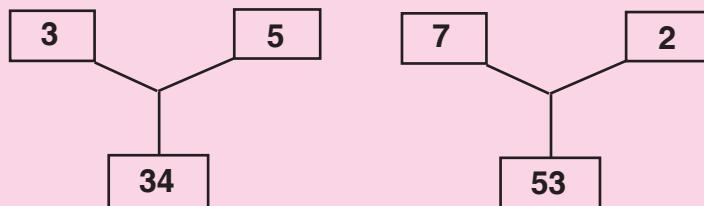
 A. 5 B. 7 C. 26
D. 29 E. 144
28.

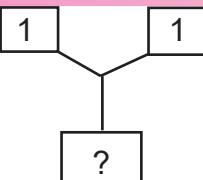
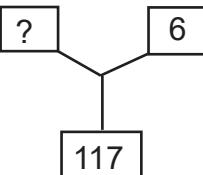
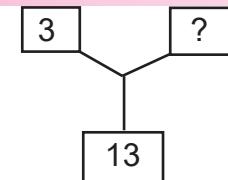
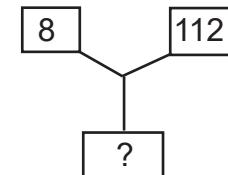
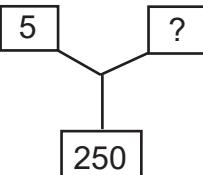
3	<input type="text"/>	3	1
---	----------------------	---	---

 A. 1 B. 0 C. 3
D. 1 E. 6
29.

<input type="text"/>	7	2	25
----------------------	---	---	----

 A. 250 B. 225 C. 300
D. 200 E. 150

G. Example:

- ~234567891011121314151617181920
30.  A. 1
B. 2
C. 3
D. 0
E. $\frac{1}{2}$
31.  A. 111
B. 18
C. 6
D. 27
E. 9
32.  A. 2
B. 4
C. 10
D. 16
E. 20
33.  A. 20
B. 96
C. 400
D. 208
E. 80
34.  A. 100
B. 150
C. 25
D. 50
E. 15

H. Example:

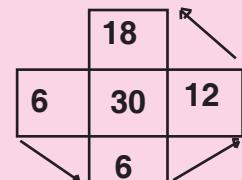
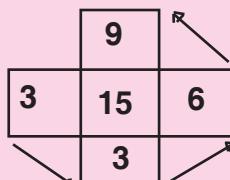
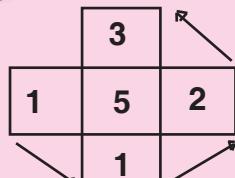
$Z * Y$ means $\frac{Z + Y}{Z - Y}$

$5 * 3$ means $\frac{5 + 3}{5 - 3}$

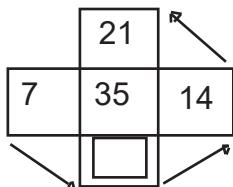
35. Evaluate $10 * 8$
A. 18 B. 13 C. 9 D. 19 E. 32
36. If $7 * x = 6$, what is x ?
A. 9 B. 15 C. 10 D. 6 E. 5
37. What is $b * 3^2$?
A. $\frac{b + 3}{b - 3}$ B. $\frac{b + 9}{b - 9}$ C. $\frac{b + 6}{b - 6}$ D. $\frac{b + 9}{b - 6}$ E. $\frac{b + 9}{9 - b}$
38. 2, ___, 18, 26, 34
A. 6 B. 10 C. 9 D. 2 E. 8
39. ___, 8, 15, 22, 29
A. 3 B. 2 C. 5 D. 1 E. 7



A. Example:

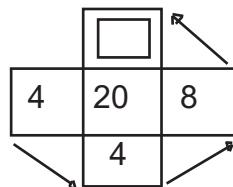


1.



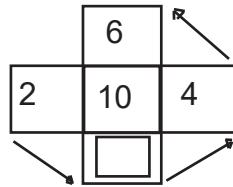
- A. 1
B. 7
C. 14
D. 27
E. 35

4.



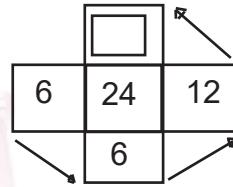
- A. 1
B. 7
C. 12
D. 27
E. 35

2.



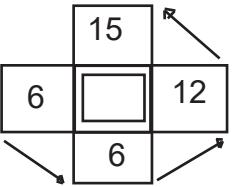
- A. 2
B. 4
C. 3
D. 6
E. 7

5.



- A. 12
B. 18
C. 15
D. 16
E. 25

3.



- A. 27
B. 10
C. 15
D. 20
E. 25

B. Example:



$$P / q \setminus r = P + q - r$$

6.

$$2 / 5 \setminus 3 = \underline{\hspace{2cm}}$$

- A. 2 B. 8 C. 6 D. 4 E. 3

7.

$$4 / 2 \setminus 1 = \underline{\hspace{2cm}}$$

- A. 4 B. 5 C. 1 D. 3 E. 7



8. $11 / 3 \setminus 7 =$ _____

A. 7 B. 21 C. 14 D. 15 E. 1

9. $9 / 9 \setminus 9 =$ _____

A. 11 B. 18 C. 9 D. 27 E. 12

C. Example:



(2)

(6)

(3)

(3)

(21)

(7)

(25)

(50)

(2)

10.

_____ ?
42 ————— 35
6

A. 4 B. 6 C. 9 D. 7 E. 29

12.

20
200 ————— ?
10

A. 200 B. 180 C. 210 D. 20 E. 10

11.

9
18 ————— 9
?

A. 4 B. 2 C. 5 D. 7 E. 3

13.

4
? ————— 12
4

A. 2 B. 16 C. 6 D. 3 E. 8



A police officer at Sabo sent a telegram by code to a police officer at Alausa. The words and codes were as follows:

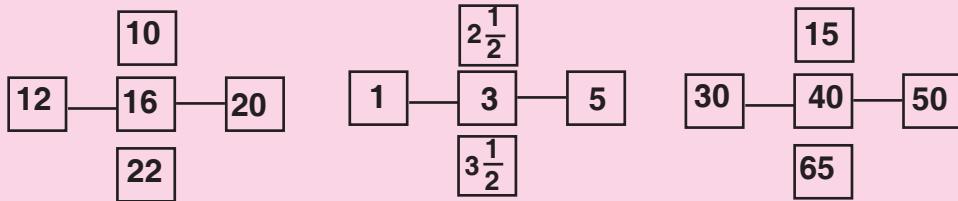
D. Example:



<u>Word</u>	<u>Code:</u>
Arrest	CTTGUV
James	LCOGU
Immediately	KOOGFKCVGNA

14. What code would the police officer use for the word “dealt”?
- A. KFCNG B. FGCNV C. GFCNV
D. FCGVN E. CFGNK
15. What word would be represented by the code “GCTNA”?
- A. ready B. mind C. dream D. early E. alter
16. What word would be represented by the code “OKNF”?
- A. lead B. mind C. meat D. mint E. mild
17. What code would be represented by “all set”?
- A. CNN UGV B. CNN UVG C. CNN VGU
D. CNN GNV E. CNN GGV

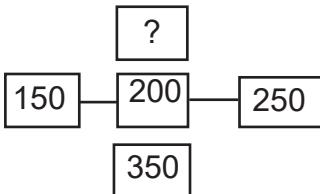
E. Example:



- 18.
- | | | |
|----|----|---|
| 12 | 16 | ? |
| 0 | 32 | |
- A. 0 B. 16 C. 8 D. 10 E. 20
- 19.
- | | | |
|----|----|--|
| 49 | 60 | |
| 40 | 80 | |
- A. 9 B. 71 C. 79 D. 89 E. 109

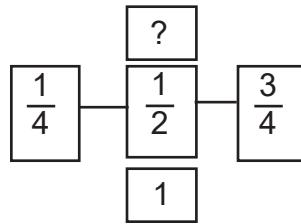


20.



- A. 50
B. 100
C. 150
D. 400
E. 550

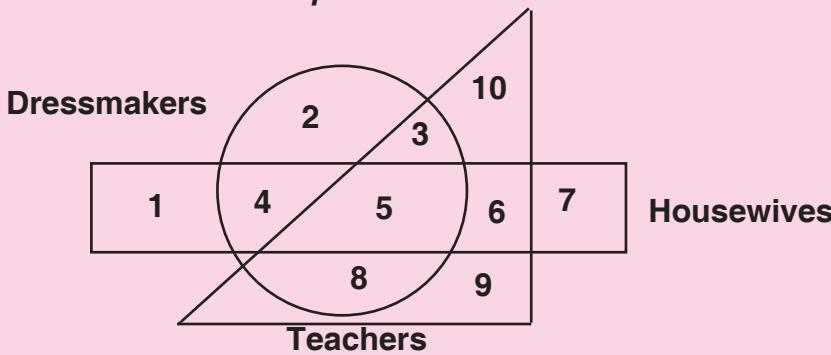
21.



- A. 2
B. 1
C. 0
D. $\frac{1}{3}$
E. $\frac{1}{2}$

F. Example:

The circle represents dressmakers; the triangle, teachers; and the rectangle, housewives. They all intercept to give 10 numbered sections. Now answer questions nos. 22-25.



22. Which sections represent women who are teachers but not dressmakers or housewives?
 A. 2 and 4 B. 3 and 8 C. 4 and 5
 D. 6 and 10 E. 9 and 10
23. Which sections represent women who are both teachers and dressmakers?
 A. 1 B. 2 C. 3 and 8 D. 4 E. 5 and 7
24. Which section represents women who are dressmakers but not teachers or housewives.?
 A. 2 B. 3 C. 4 D. 5 E. 6
25. Which sections represent women who are dressmakers and are also teachers but not housewives?
 A. 5 and 8 B. 5 and 6 C. 4 and 8 D. 3 and 8 E. 3 and 5



G. Example:

6 : ₦36,000

1: ₦6,000

12: ₦36,000

1: ₦3,000

4 : ₦28,000

1 : ₦7,000

26. : ₦56,000 A. 14 B. 17 C. 7
1 : ₦8,000 D. 21 E. 12
27. 6 : ₦120,000 A. ₦60,000 B. ₦30,000
1 : C. ₦40,000 D. ₦20,000
E. ₦120,000
28. 13 : ₦169,000 A. 1 B. 6 C. 7
 : ₦13,000 D. 12 E. 0
29. 10 : A. ₦480,000 B. ₦24,000
1 : ₦24,000 C. ₦36,000 D. ₦100,000
E. ₦10,000
30. : ₦225,000 A. 15 B. 3 C. 25
1 : ₦45,000 D. 20 E. 5
31. 6 : A. ₦72,000 B. ₦144,000
1 : ₦12,000 C. ₦60,000 D. ₦96,000
E. ₦24,000

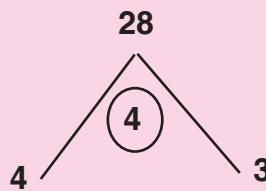
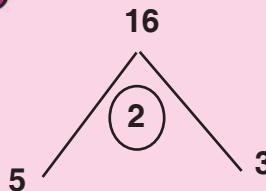
H. Example:

$$\begin{array}{r} 6 \ t \ 2 = 12 \\ 3 \ p \ 2 = 5 \end{array}$$

$$\begin{array}{r} 8 \ m \ 4 = 4 \\ 6 \ t \ 2 \ m \ 3 = 9 \end{array}$$



- ~234567891011121314151617181920
32. $7 \text{ t } 3 = \boxed{\quad}$ A. 10 B. 21 C. 12
D. 15 E. 18
33. $50 \text{ m } 10 \text{ p } 6 = \boxed{\quad}$ A. 60 B. 40 C. 55
D. 46 E. 26
34. $(8 \text{ t } \boxed{\quad}) \text{ m } (4 \text{ p } 2) = 10$ A. 16 B. 12 C. 14
D. 10 E. 2
35. $2 \text{ t } 9 \text{ t } \boxed{\quad} = 72$ A. 20 B. 4 C. 14
D. 18 E. 34

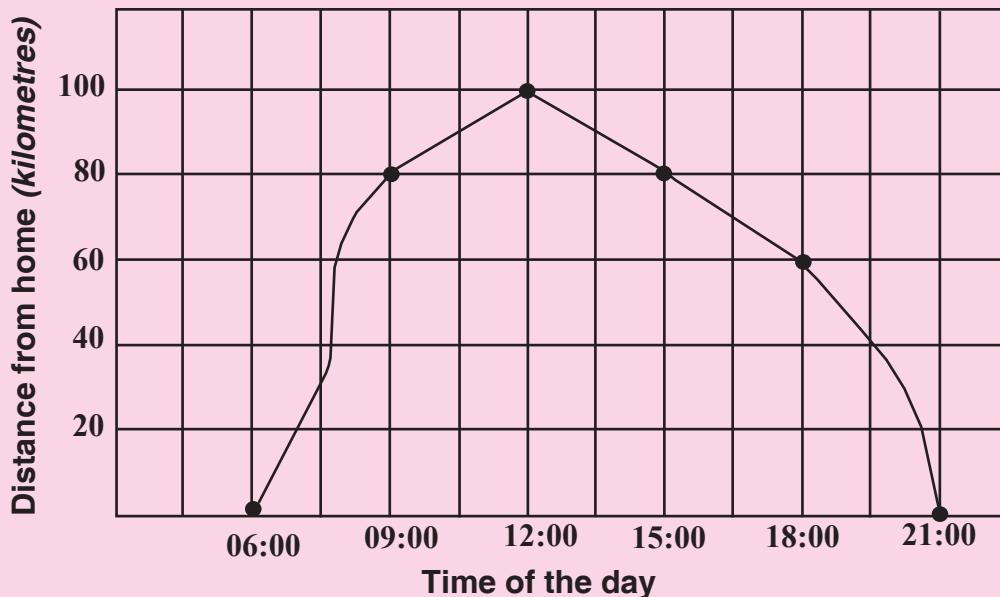
I. Example:

36. $\begin{array}{c} 39 \\ \triangle \\ 9 \quad 4 \\ | \quad | \\ ? \end{array}$ A. 3 B. 5 C. 10 D. 12 E. 6
37. $\begin{array}{c} ? \\ \triangle \\ 12 \quad 17 \\ | \quad | \\ 3 \end{array}$ A. 27 B. 87 C. 63 D. 25 E. 48
38. $\begin{array}{c} 20 \\ \triangle \\ | \quad | \\ 1 \quad ? \end{array}$ A. 16 B. 12 C. 10 D. 14 E. 18
39. $\begin{array}{c} ? \\ \triangle \\ 7 \quad 6 \\ | \quad | \\ 0 \end{array}$ A. 39 B. 13 C. 0 D. 12 E. 6
40. $\begin{array}{c} 105 \\ \triangle \\ 20 \quad 1 \\ | \quad | \\ ? \end{array}$ A. 5 B. 10 C. 4 D. 6 E. 8



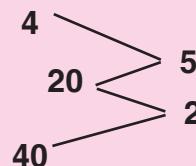
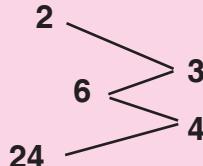
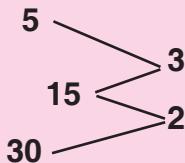
A. Example:

Below is a line graph showing the distance Emeka covered on Friday from home.



- How far from home was Emeka at 3:00 pm? _____ kilometres away.
- Between which two consecutive times did he travel the furthest ? _____ and _____.
- What was the furthest distance he travelled from home ? _____.
- What time did Emeka return home? _____.
- Between _____ a.m. and _____ p.m. Emeka was 80 kilometres or more away from home.



B. Example:

6. $\begin{array}{c} 7 \\ \swarrow \quad \searrow \\ 49 \\ \swarrow \quad \searrow \\ 98 \end{array}$ A. 2
B. 4
C. 12
D. 16
E. 18
7. $\begin{array}{c} 3 \\ \swarrow \quad \searrow \\ 21 \\ \swarrow \quad \searrow \\ \square \end{array}$ A. 48
B. 26
C. 25
D. 84
E. 33
8. $\begin{array}{c} \square \\ \swarrow \quad \searrow \\ 16 \\ \swarrow \quad \searrow \\ 80 \end{array}$ A. 8
B. 4
C. 3
D. 2
E. 5
9. $\begin{array}{c} 9 \\ \swarrow \quad \searrow \\ \square \\ \swarrow \quad \searrow \\ 36 \end{array}$ A. 15
B. 42
C. 85
D. 30
E. 36
10. $\begin{array}{c} 5 \\ \swarrow \quad \searrow \\ 30 \\ \swarrow \quad \searrow \\ 60 \end{array}$ A. 8
B. 6
C. 15
D. 12
E. 14

C. Example:

$$\begin{array}{rcl} 9 * * * 2 = 9 + 8 & & = 17 \\ 6 * * * 4 = 6 + 5 + 4 + 3 & & = 18 \\ 10 * * * 3 = 10 + 9 + 8 & & = 27 \end{array}$$

11. $20 * * * 4 = \square$
A. 76 B. 74 C. 27 D. 24 E. 36
12. $\square * * * 1 = 15$
A. 15 B. 8 C. 12 D. 10 E. 22



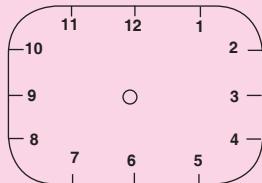
13. $(5 * * * 3) * * * 2 = \boxed{\quad}$
 A. 10 B. 23 C. 12 D. 25 E. 15

14. $7 * * * \boxed{\quad} = 18$
 A. 8 B. 9 C. 11 D. 3 E. 5

15. $(7 * * * 1) * * * \boxed{\quad} = 18$
 A. 10 B. 4 C. 2 D. 1 E. 3

D. Use the diagram of the clock face to work out questions 16 - 20:

D. Example:



$$\begin{array}{rcl} 8 + 3 &=& 11 \\ 3 + 2 &=& 5 \\ 9 - 8 &=& 1 \\ 2 - 5 &=& 9 \end{array}$$

16. $11 + 5 = \boxed{\quad}$
 A. 14 B. 4 C. 7 D. 8 E. 6

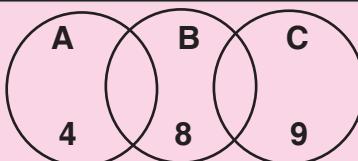
17. $4 + 3 = \boxed{\quad}$
 A. 12 B. 10 C. 7 D. 6 E. 9

18. $9 + \boxed{\quad} = 2$
 A. 7 B. 6 C. 5 D. 12 E. 8

19. $10 - 3 = \boxed{\quad}$
 A. 7 B. 6 C. 5 D. 12 E. 8

20. $5 - 5 = \boxed{\quad}$
 A. 10 B. 12 C. 0 D. 4 E. 6



E. Example:

$$A^2 = 4 \times 4 = 16$$

$$B^2 = 8 \times 8 = 64$$

$$C^2 = 9 \times 9 = 81$$

21. What is the sum of C^2 and B^2 ?
 A. 145 B. 140 C. 112 D. 154 E. 114
22. What is the sum of figures A^2 and C^2 ?
 A. 80 B. 59 C. 97 D. 79 E. 40
23. Add B^2 and C^2 then subtract A^2 .
 A. 109 B. 120 C. 229 D. 129 E. 136
24. Multiply B^2 by 7 and divide by 4.
 A. 102 B. 120 C. 132 D. 112 E. 114
25. Subtract 50 from the sum of C^2 and A^2 .
 A. 47 B. 57 C. 74 D. 42 E. 50

F. Example:

$$(9 \vee 8 \vee 4) = 21$$

$$(10 \wedge 6 \wedge 2) = 2$$

$$(6 \vee 3 \wedge 4) = 5$$

26. $(12 \vee 2 \vee 3) = \boxed{}$
 A. 11 B. 17 C. 18 D. 7 E. 10
27. $(15 \wedge 4 \wedge 8) = \boxed{}$
 A. 12 B. 14 C. 27 D. 11 E. 3



28. $(18 \vee 2 \wedge 10) = \boxed{\quad}$

- A. 10 B. 16 C. 0 D. 8 E. 12

29. $14 = (7 \vee 3 \vee \boxed{\quad})$

- A. 5 B. 4 C. 14 D. 10 E. 9

30. $(6\frac{1}{2} \vee 3\frac{1}{2} \vee 9) = \boxed{\quad}$

- A. 20 B. $19\frac{1}{2}$ C. 18 D. 19 E. 29

G. Example:

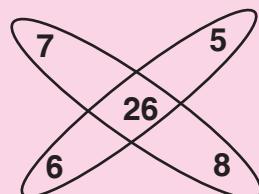
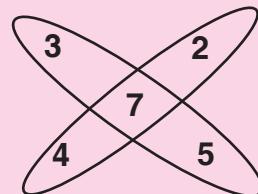
Study the table and use it to answer questions 31-35:



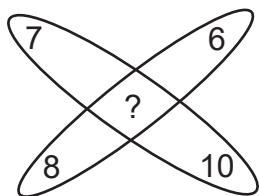
*	3	4	5	6	7	8
2	0	2	4	0	2	4
3	3	a	3	0	3	0
4	0	4	b	0	4	2
5	c	2	1	0	5	d
6	0	0	e	0	0	0

31. What does 'a' represent ?
 A. 1 B. 2 C. 4 D. 0 E. 5
32. What does 'b' represent ?
 A. 1 B. 3 C. 5 D. 4 E. 2
33. What does 'c' represent ?
 A. 2 B. 3 C. 5 D. 1 E. 4
34. What does 'd' represent ?
 A. 4 B. 3 C. 0 D. 2 E. 5
35. What does 'e' represent ?
 A. 1 B. 3 C. 4 D. 2 E. 0



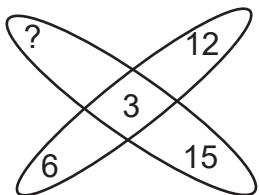
H. Example:

36.



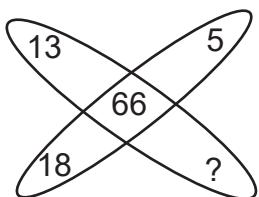
- A. 34 B. 19 C. 22
D. 31 E. 26

37.



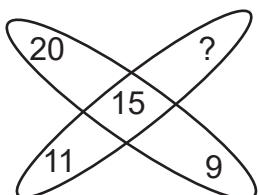
- A. 5 B. 2 C. 8
D. 10 E. 6

38.



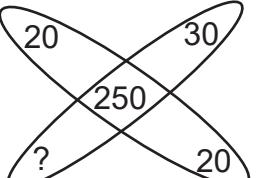
- A. 14 B. 20 C. 36
D. 12 E. 24

39.



- A. 20 B. 15 C. 31
D. 35 E. 44

40.



- A. 30 B. 45 C. 50
D. 20 E. 5





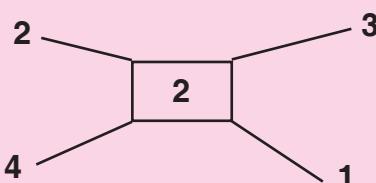
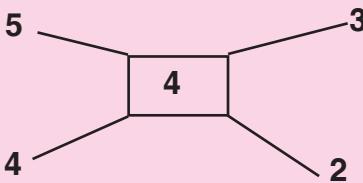
A. Example:



- How far is it from Garki to Area 1? _____ km
- What town is the furthest away by road from Garki ? _____
- How long is the shortest route from Wuse to Asokoro? _____
- What is the distance between Area 1 and maitama via Asokoro? _____
- How far is it from Wuse to Asokoro via Maitama? _____
- $(8, 12) : (13, 17) : (20, 24) : (29, J)$. $J =$
A. 22 B. 40 C. 27 D. 29 E. 33
- $(12, 18) : (19, 25) : (23, 29) : (21, B)$. $B =$
A. 27 B. 22 C. 33 D. 28 E. 13



8. $(7, 9) : (10, M) : (15, 17) : (21, 23)$. $M =$
 A. 10 B. 12 C. 16 D. 11 E. 2
9. $(13, N) : (15, 25) : (21, 25) : (27, 37)$. $N =$
 A. 16 B. 17 C. 12 D. 15 E. 18
10. $(14, 17) : (21, L) : (23, 26) : (27, 30)$. $L =$
 A. 10 B. 22 C. 11 D. 16 E. 24

B. Example:

11.
 A. 23 B. 19 C. 25
 D. 7 E. 16

14.
 A. 21 B. 12 C. 17
 D. 25 E. 24

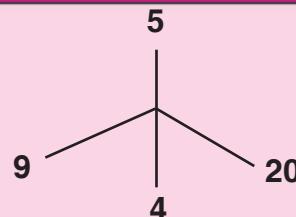
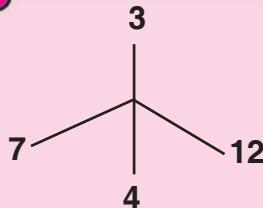
12.
 A. 5 B. 18 C. 16
 D. 4 E. 1

15.
 A. 23 B. 7 C. 8
 D. 32 E. 5

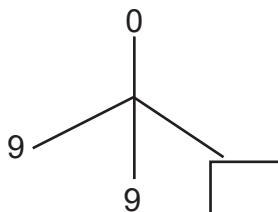
13.
 A. 57 B. 12 C. 24
 D. 68 E. 46



C. Example:

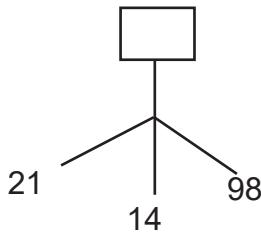


16.



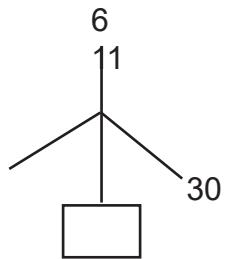
- A. 9 B. 0 C. 18
D. 37 E. 27

17.



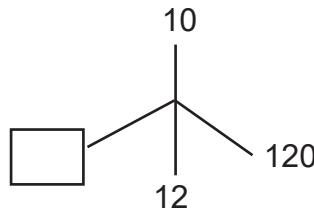
- A. 7 B. 9 C. 17
D. 24 E. 16

18.



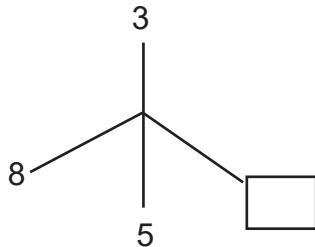
- A. 10 B. 5 C. 12
D. 14 E. 27

19.



- A. 33 B. 24 C. 84
D. 75 E. 22

20.



- A. 30 B. 15 C. 20
D. 25 E. 18



D. Example:

$$3 \xrightarrow{4} 12 \xrightarrow{6} 2 \quad 5 \xrightarrow{6} 30 \xrightarrow{12} 2\frac{1}{2}$$

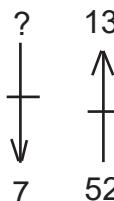
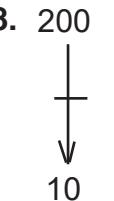
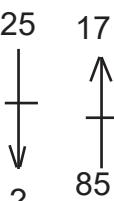
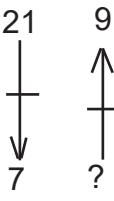
Use the above example to answer questions 21 - 25:

21. $\begin{array}{l} 2 \xrightarrow{8} \boxed{} \\ \text{A. } 8 \quad \text{B. } 4 \quad \text{C. } 12 \quad \text{D. } 9 \quad \text{E. } 6 \end{array}$
22. $\begin{array}{l} 4 \\ 6 \xrightarrow{4} \boxed{} \xrightarrow{12} 2 \\ \text{A. } 24 \quad \text{B. } 26 \quad \text{C. } 12 \quad \text{D. } 32 \quad \text{E. } 28 \end{array}$
23. $\begin{array}{l} \boxed{} \xrightarrow{10} 50 \xrightarrow{25} 2 \\ \text{A. } 20 \quad \text{B. } 60 \quad \text{C. } 30 \quad \text{D. } 8 \quad \text{E. } 5 \end{array}$
24. $\begin{array}{l} 6 \\ 6 \xrightarrow{6} \boxed{} \xrightarrow{9} 9 \\ \text{A. } 20 \quad \text{B. } 10 \quad \text{C. } 5 \quad \text{D. } 4 \quad \text{E. } 7 \end{array}$
25. $\begin{array}{l} 11 \\ 12 \xrightarrow{11} 132 \xrightarrow{\boxed{}} 44 \\ \text{A. } 3 \quad \text{B. } 6 \quad \text{C. } 9 \quad \text{D. } 7 \quad \text{E. } 8 \end{array}$

E. Example:

$$\begin{array}{rcl} 20 & 8 & \frac{4}{15} \\ \downarrow & \uparrow & \downarrow \\ 5 & 32 & 1\frac{1}{3} \\ & & \uparrow \\ & & \frac{1}{5} \end{array} \quad \begin{array}{rcl} 10 & 3 & \\ \downarrow & \uparrow & \\ 2\frac{1}{2} & 12 & \end{array}$$



26. ? 13 A. $\frac{1}{7}$ 27. ? 1 A. 0

 B. 28 C. 35 D. 49 E. 7
28. 200 6 A. 120

 B. 100 C. 60 D. 50 E. 110
29. 25 17 A. 5 30. 21 9 A. 147

 B. 6 C. 10 D. 15 E. 12
30. 21 9 A. 147

 B. 3 C. 1 D. 2 E. 27

F. Example:

$$8.8 = 8 + \frac{8}{8} = 8 + 1 = 9, \quad 6 * 3 = 3 \times 2 - \frac{6}{3} = 6 - 2 = 4$$

$$3.2 = 3 + \frac{3}{2} = 3 + 1\frac{1}{2} = 4\frac{1}{2}, \quad 4 * 2 = 2 \times 2 - \frac{4}{2} = 4 - 2 = 2$$

31. 6. 10 = ? A. 6 B. $6\frac{3}{5}$ C. $\frac{3}{5}$ D. 16 E. 4
32. ? * 4 = $7\frac{1}{4}$ A. 4 B. 20 C. 3 D. 5 E. 8
33. 6.3 = ? A. 8 B. 9 C. $3\frac{1}{2}$ D. 5 E. 7
34. 4 * 4 = ? A. 8 B. 7 C. 3 D. 6 E. 12
35. (10 * 4). 4 = ? A. 10 B. $3\frac{3}{4}$ C. $5\frac{1}{2}$ D. $6\frac{7}{8}$ E. $7\frac{7}{8}$



G. Example:

$$\begin{array}{ccc}
 4 & \longleftrightarrow & 8 = 3 \\
 3 & \longleftrightarrow & 3 = 2 \\
 1 & \longleftrightarrow & 6 = 7
 \end{array}$$

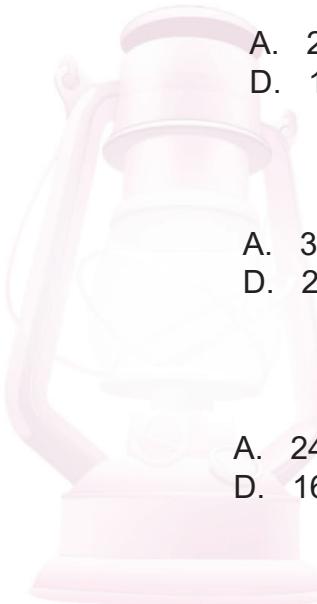
36. $7 \longleftrightarrow ? = 14$ A. 2 B. 3 C. 4 D. 5 E. 6
37. $10 \longleftrightarrow 15 = ?$
A. 25 B. $12\frac{1}{2}$ C. $1\frac{1}{2}$ D. $2\frac{1}{2}$ E. 5
38. $4 \longleftrightarrow ? = 1\frac{1}{2}$
A. 3 B. 4 C. 2 D. 1 E. 6
39. $? \longleftrightarrow 4 = 3$
A. 7 B. 2 C. 1 D. $1\frac{1}{3}$ E. $\frac{3}{4}$
40. $3 \longleftrightarrow ? = 10$
A. 27 B. 13 C. 7 D. 3 E. $2\frac{1}{3}$



A. Example:

12	5	2
8	1	10
5	7	7

1. 5 8 ? A. 8 B. 11 C. 10
 2 13 9 D. 15 E. 5
- 16 1 7
2. 9 14 22 A. 25 B. 2 C. 8
 18 6 21 D. 12 E. 4
 ? 28 13
3. 11 15 10 A. 33 B. 9 C. 15
 2 1 ? D. 22 E. 30
- 20 7 9
4. ? 37 18 A. 24 B. 38 C. 22
 42 5 30 D. 16 E. 44
- 24 28 25
5. 16 18 28 A. 21 B. 17 C. 26
 31 ? 17 D. 14 E. 32
- 12 12 38





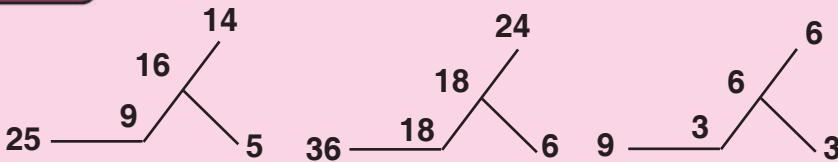
B. Example:

Study the table below and find the numbers the letters represent:

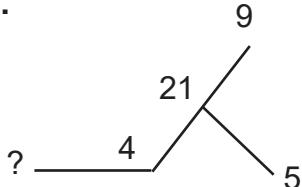
3^2	=	4	x	2	+	1
5^2	=	4	x	6	+	1
7^2	=	4	x	12	+	1
9^2	=	4	x	20	+	1
11^2	=	4	x	30	+	1
13^2	=	4	x	a	+	1
d^2	=	b	x	c	+	1
17^2	=	4	x	72	+	1
19^2	=	4	x	e	+	1

6. What does 'e' stand for?
A. 60 B. 70 C. 80 D. 90 E. 100
7. What does 'c' represent?
A. 36 B. 40 C. 26 D. 56 E. 66
8. What does 'a' stand for?
A. 32 B. 42 C. 52 D. 3.4 E. 44
9. What does 'd' stand for?
A. 10 B. 15 C. 25 D. 20 E. 35
10. What does 'b' represent?
A. 1 B. 2 C. 3 D. 4 E. 5

C. Example:

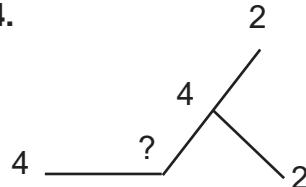


11.



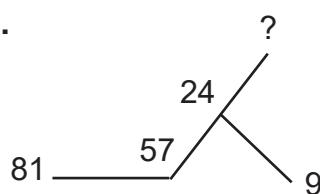
- A. 20
B. 30
C. 25
D. 9
E. 26

14.



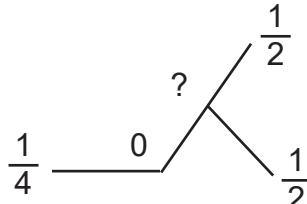
- A. 0
B. 1
C. 2
D. 3
E. 6

12.



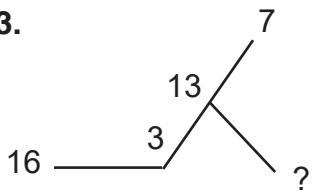
- A. 20
B. 33
C. 18
D. 66
E. 48

15.



- A. $\frac{1}{2}$
B. 1
C. 2
D. $1\frac{1}{4}$
E. $\frac{1}{4}$

13.



- A. 2
B. 4
C. 3
D. 6
E. 10

D. Example:

$$\begin{array}{rcl} 5 \searrow & 3 = & 5, 4, 3, = 12 \\ 10 \searrow & 4 = & 10, 9, 8, 7 = 34 \\ 8 \searrow & 2 = & 8, 7 = 15 \end{array}$$

16. $7 \searrow 3 = ?$

- A. 17 B. 15 C. 18 D. 20 E. 10

17. $? \searrow 2 = 33$

- A. 15 B. 12 C. 14 D. 17 E. 16

18. $19 \searrow ? = 19$

- A. 1 B. 2 C. 3 D. 4 E. $\frac{1}{2}$



19. $12 \searrow 5 = ?$
 A. 4 B. 50 C. 60 D. 70 E. 48
20. $18 \searrow 2 \searrow 3 = ?$
 A. 100 B. 102 C. 101 D. 104 E. 110

E. Example:

$$\begin{array}{r} 8 . . . 6 = 16 \\ 10 . . . 5 = 25 \\ \hline 1 20 = 1 \end{array}$$

21. $6 . . . 4 = ?$
 A. 7 B. 24 C. 12 D. 3 E. 8
22. $3 . . . 10 = ?$
 A. 18 B. 26 C. 10 D. 16 E. 5
23. $10 . . . ? = 20$
 A. 8 B. 26 C. 5 D. 6 E. 7
24. $? . 5 = 100$
 A. 10 B. 15 C. 25 D. 20 E. 30
25. $? . . 3 = 24$
 A. 14 B. 16 C. 15 D. 17 E. 18

F. Example:

The code LO245781C6 stands for LUMBERJACK.
 Use this to answer questions 26 - 30.

26. What will be the code for CRACKER?
 A. C751C57 B. C71C657 C. C175617
 D. C7515C7 E. C716C57



27. What will code **71C57** represent?
 A. BRAKE B. REAR C. RACER D. RAMBO E. RAKER
28. What will represent the code **02475LL1**?
 A. UMBRELLE B. UMBRELLA C. CRACKERL
 D. UMBRELA E. None of the above.
29. What code represents **REMEMBER?**
 A. 75252457 B. 752457 C. 57524275
 D. 7552475 E. 75524275
30. What is **417457**?
 A. CRACKER B. LUMBER C. BRAKER
 D. BARBER E. LEAKELI

G. Example:

2 5 $6\frac{1}{2}$

40 50 55

12 18 21

31. 100 ? 175
 A. 135 B. 145 C. 125
 D. 140 E. 150

34. 0 44 ?
 A. 55 B. 66 C. 77
 D. 88 E. 48

32. 8 16 ?
 A. 50 B. 14 C. 20
 D. 20 E. 16

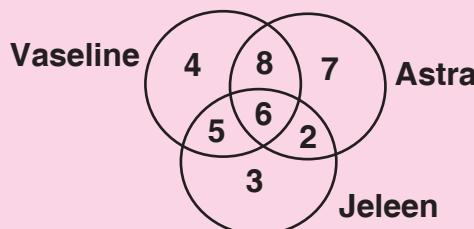
35. 10 ? 13
 A. 2 B. 6 C. 8
 D. 10 E. 12

33. 44 ? 35
 A. 18 B. 16 C. 35
 D. 0 E. 17



- H. The diagram below represents the types of creams used by some people.

H. Example:



36. How many people use only Jeleen?
 A. 4 B. 7 C. 3 D. 8 E. 16
37. How many people use all the three types of creams?
 A. 35 B. 9 C. 12 D. 6 E. 8
38. How many people use Vaseline and Astra only?
 A. 4 B. 8 C. 7 D. 12 E. 19
39. How many people use only Vaseline?
 A. 7 B. 3 C. 4 D. 8 E. 6
40. How many people use Astra?
 A. 20 B. 23 C. 22 D. 24 E. 26





Date:

A. Example:

$$\begin{array}{l} P \quad 18 \longrightarrow 2, \ 3, \ 3 \\ P \quad 12 \longrightarrow 2, \ 2, \ 3 \\ P \quad 30 \longrightarrow 2, \ 3, \ 5 \end{array}$$

1. $P \ 25 \longrightarrow 5, \ ?$
A. 2 B. 3 C. 4 D. 5 E. 6
2. $P \ ? \longrightarrow 3, \ 5, \ 7$
A. 9 B. 56 C. 11 D. 105 E. 15
3. $P \ ? \longrightarrow 2, \ 2, \ 5.$
A. 20 B. 25 C. 16 D. 9 E. 11
4. $P \ 130 \longrightarrow 2, \ 5, \ ?$
A. 3 B. 7 C. 10 D. 13 E. 11
5. $P \ 28 \longrightarrow 2, \ 2, \ ?$
A. 4 B. 5 C. 6 D. 7 E. 8
6. $P. \ ? \longrightarrow 5, \ 7, \ 11.$
A. 35 B. 105 C. 385 D. 77 E. 1925

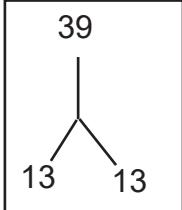
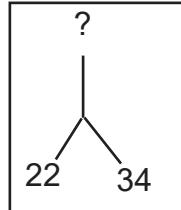
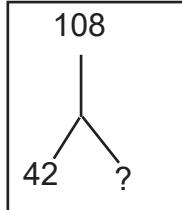
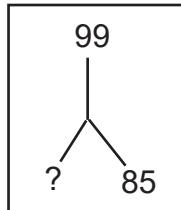
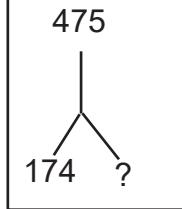
**B. Example:**

$$30 = \boxed{150} \quad \begin{array}{c} 150 \\ \diagdown \quad \diagup \\ 20 \quad 100 \end{array}$$

$$45 = \boxed{60} \quad \begin{array}{c} 60 \\ \diagdown \quad \diagup \\ 7 \quad 8 \end{array}$$

$$60 = \boxed{95} \quad \begin{array}{c} 95 \\ \diagdown \quad \diagup \\ 17 \quad 18 \end{array}$$



7.  ? = A. 38
B. 78
C. 26
D. 0
E. 13
10.  22 = A. 78
B. 34
C. 44
D. 22
E. 17
8.  56 = A. 9
B. 10
C. 6
D. 8
E. 7
11.  14 = A. 85
B. 14
C. 0
D. 9
E. 11
9.  128 = A. 173
B. 174
C. 347
D. 475
E. 128

C. Example: $T(0) = 1, T(1) = 3, T(2) = 9, T(3) = 27$

12. What is $T(4)$?
A. 243 B. 81 C. 30 D. 27 E. 9
13. What is 243 represented by ?
A. $T(4)$ B. $T(5)$ C. $T(6)$ D. $T(3) \times 3$ E. $9 \times T(1)$
14. What is $\frac{T(6)}{T(5)}$?
A. $\frac{1}{3}$ B. 1 C. 3 D. 6 E. 9



D. Example:

$$\begin{pmatrix} 1 & 1 \\ 2 & 4 \end{pmatrix} + \begin{pmatrix} 3 & 3 \\ 1 & 2 \end{pmatrix} = \begin{pmatrix} 4 & 4 \\ 3 & 6 \end{pmatrix}$$

$$\begin{pmatrix} 2 & 1 \\ 1 & 0 \end{pmatrix} + \begin{pmatrix} 2 & 2 \\ 2 & 2 \end{pmatrix} = \begin{pmatrix} 4 & 3 \\ 3 & 2 \end{pmatrix}$$

15. $\begin{pmatrix} 1 & 2 \\ 3 & 4 \end{pmatrix} + \begin{pmatrix} 1 & 1 \\ 1 & 1 \end{pmatrix} = \begin{pmatrix} 2 & \boxed{} \\ 4 & 5 \end{pmatrix}$

- A. 1 B. 2 C. 3 D. 4 E. 5

16. $\begin{pmatrix} \boxed{} & 5 \\ 3 & 2 \end{pmatrix} + \begin{pmatrix} 2 & 1 \\ 0 & 2 \end{pmatrix} = \begin{pmatrix} 4 & 6 \\ 3 & 4 \end{pmatrix}$

- A. 1 B. 2 C. 4 D. 6 E. 7

17. $\begin{pmatrix} 1 & 1 \\ 2 & 1 \end{pmatrix} + \begin{pmatrix} 3 & 1 \\ 2 & 5 \end{pmatrix} = \begin{pmatrix} 4 & 2 \\ 4 & \boxed{} \end{pmatrix}$

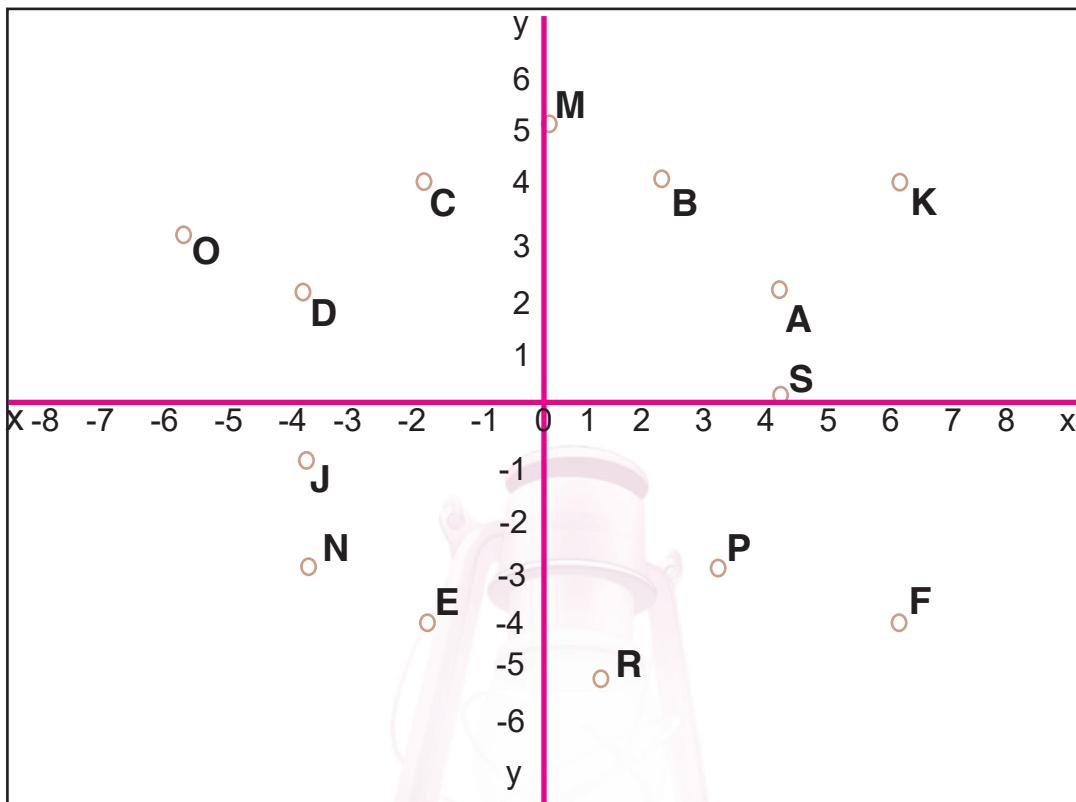
- A. 2 B. 3 C. 4 D. 5 E. 6

18. $\begin{pmatrix} 2 & 4 \\ 3 & 2 \end{pmatrix} + \begin{pmatrix} 8 & 5 \\ 3 & \boxed{} \end{pmatrix} = \begin{pmatrix} 10 & 9 \\ 6 & 11 \end{pmatrix}$

- A. 5 B. 6 C. 8 D. 9 E. 11



E. This is a graph showing position of points:



If point A = (4, 2), Point B = (2, 4)

Point C = (-2, 4) Point D = (-4, 2)

Point E = (-2, -4), Point F = (6, -4)

19. What is the position of point K ?

- A. (2, 4) B. (6, 2) C. (6, 5) D. (6, 4) E. (4, 6)

20. The position of point O is _____.

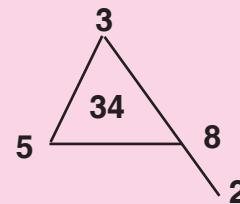
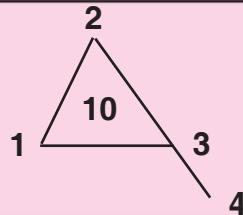
- A. (-6, 3) B. (-6, -3) C. (3, -6) D. (-6, 4) E. (-2, 4)

21. Point J is _____.

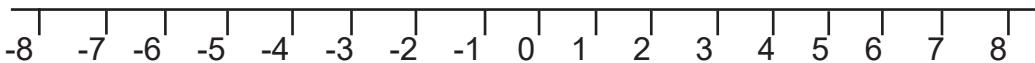
- A. (-4, -1) B. (-4, 1) C. (-5, 0) D. (-4, 0) E. (-4, -4)



22. The position of point R is _____
 A. (5, 1) B. (-5, 1) C. (1, -5) D. (-1, -5) E. (0, -5)
23. What is the position of point P ?
 A. (3, -3) B. (3, 3) C. (-3, 3) D. (3, 0) E. (-3, 4)
24. Find the position of point S.
 A. (0, 0,) B. (0, 4) C. (4, 4) D. (6, -4) E. (4, 0)

F. Example:

25.
 A. 15
 B. 16
 C. 17
 D. 18
 E. 19
26.
 A. 6
 B. 7
 C. 8
 D. 9
 E. 10
27.
 A. 4
 B. 5
 C. 6
 D. 8
 E. 9
28.
 A. 4
 B. 10
 C. 8
 D. 0
 E. 6

G. This sample illustrates a number line.**Use it to answer questions 29 - 33:**

29. Find $-5 + 8$
 A. - 3 B. 0 C. 13 D. 3 E. 4



30. $4 - 7 = ?$
 A. 10 B. 11 C. 3 D. - 2 E. - 3
31. $-4 - 1 - 3 =$
 A. 8 B. 0 C. - 8 D. 9 E. 12
32. $3 - 4 - 6 = ?$
 A. - 7 B. 8 C. 7 D. 8 E. 13
33. $-7 - 8 + 3 = ?$
 A. 12 B. 8 C. 6 D. 15 E. - 12

H. Example:

$$\begin{bmatrix} m & p \\ q & n \end{bmatrix} = m \times n - q \times p$$

34. $\begin{bmatrix} 5 & 2 \\ 4 & 3 \end{bmatrix} = ?$ A. 6 B. 23 C. 7 D. 20 E. 14
35. $\begin{bmatrix} 5 & 3 \\ 3 & 4 \end{bmatrix} = ?$ A. 3 B. 6 C. 11 D. 8 E. 4
36. $\begin{bmatrix} 6 & 5 \\ 9 & 10 \end{bmatrix} = ?$ A. 8 B. 0 C. 20 D. 1 E. 15
37. $\begin{bmatrix} m & 2 \\ 2 & 1 \end{bmatrix} = 0$ A. 1 B. 2 C. 3 D. 4 E. 5
38. $\begin{bmatrix} 6 & x \\ 4 & 3 \end{bmatrix} = 6$ A. 3 B. 6 C. 4 D. 8 E. 2
39. $\begin{bmatrix} 8 & 5 \\ p & 4 \end{bmatrix} = 7$ A. 8 B. 7 C. 6 D. 5 E. 4

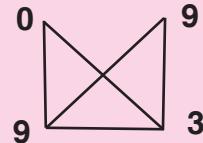
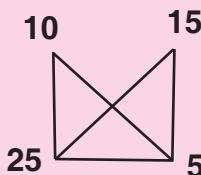


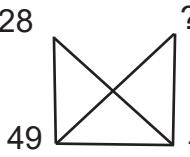
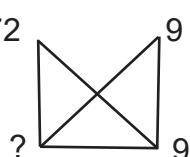
A. Example:

$$A \downarrow B = A \times B$$

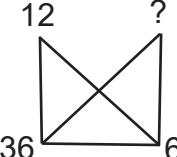
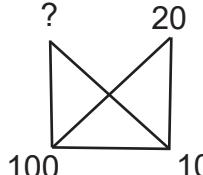
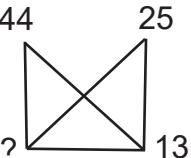
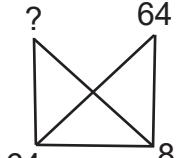
$$A \uparrow B = A + B$$

1. $(5 \uparrow 2) \downarrow 3 = ?$
 A. 4 B. 6 C. 8 D. 7 E. 21
2. $\frac{7 \downarrow 3}{5 \uparrow 2} = ?$
 A. 8 B. 2 C. 4 D. 3 E. 21
3. $(5 \uparrow 3) (3 \uparrow 2) = ?$
 A. 16 B. 40 C. 13 D. 16 E. 24
4. $(3 \uparrow 4) (4 \downarrow 3) = ?$
 A. 36 B. 14 C. 48 D. 84 E. 64

B. Example:

5.  ?
 A. 68
 B. 77
 C. 31
 D. 8
 E. 21
6.  ?
 A. 48
 B. 36
 C. 28
 D. 81
 E. 18



7. 
- A. 24
B. 12
C. 48
D. 60
E. 16
9. 
- A. 50
B. 60
C. 70
D. 80
E. 40
8. 
- A. 39
B. 63
C. 26
D. 169
E. 81
10. 
- A. 1
B. 0
C. 2
D. 3
E. 1

C. Example:



$$A = \{0, 1, 2, 3, 4, 5\}$$

$$B = \{4, 5, 6, 8\}$$

$$C = \{1, 3, 5, 7\}$$

$$A \cup B = \{0, 1, 2, 3, 4, 5, 6, 8\}$$

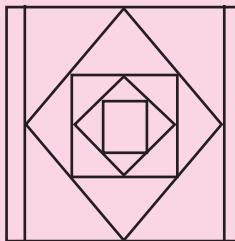
$$A \cap B = \{4, 5\}$$

11. $A \cap C = ?$
 A. $\{0, 1, 3, 3, 5, 7\}$ B. $\{1, 3, 5\}$ C. $\{0, 1, 2, 3, 4, 5, 7\}$
 D. $\{0, 2, 4, 7\}$ E. $\{0, 1, 2, 4, 5, 7\}$
12. $B \cap C = ?$
 A. $\{3, 4, 5\}$ B. $\{4, 5, 6, 7, 8\}$ C. 5
 D. $\{5, 5, 7, 7\}$ E. $\{1, 3, 4, 5, 6, 7, 8\}$

If $A = \{7, 8, 9\}$ and $B = \{1, 3, 5, 7, 8, 9, 10\}$

13. $A \cup B = ?$
 A. $\{1, 3, 5, 7, 8, 9, 10\}$ B. $\{7, 8, 9\}$ C. $\{3, 4, 5, 7, 8\}$
 D. $\{1, 7, 8, 9\}$ E. $\{7, 8\}$
14. $A \cap B = ?$
 A. $\{1, 3, 5, 10\}$ B. $\{7, 8, 9\}$ C. $\{1, 3, 9, 10\}$
 D. $\{5, 7, 8, 9, 10\}$ E. $\{8, 9, 10\}$



D. Example:

Use the diagram above to answer questions 15 - 16:

15. How many squares are there?
 A. 6 B. 5 C. 4 D. 3 E. 2
16. How many triangles are there?
 A. 8 B. 12 C. 16 D. 20 E. 24

E. Example:

A. (24, 1) B. (2, 12) C. (10, 2) D. (6, 4) E. (8, 3)
 are number pairs. The odd one out is C.

17. A. (30, 2) B. (20, 3) C. (12, 6) D. (15, 4) E. (60, 1)
18. A. (56, 1) B. (8, 7) C. (28, 2) D. (6, 9) E. (7, 8)
19. A. (16, 8) B. (12, 3) C. (9, 4) D. (18, 2) E. (6, 6)
20. A. $\left(\frac{2}{3}, \frac{1}{2}\right)$ B. $(6, \frac{1}{3})$ C. $(\frac{1}{6}, 2)$ D. $(\frac{1}{9}, 3)$ E. $(\frac{5}{3}, \frac{1}{5})$
21. A. (2, 27) B. (18, 3) C. (5, 11) D. (6, 9) E. (54, 1)



F. Example:

$$2! = 2 \times 1 = 2$$

$$4! = 4 \times 3 \times 2 \times 1 = 24$$

$$6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$$

22. $3! + 5!$

- A. 126 B. 120 C. 15 D. 8 E. 6

23. $\frac{6!}{4!} - \frac{5!}{4!}$

- A. 3 B. 20 C. 25 D. 30 E. 35

24. $\frac{3! + 2!}{2!}$

- A. 6 B. 4 C. 3 D. $2\frac{1}{2}$ E. 1

25. $(4! - 3!) 2!$

- A. 2 B. 18 C. 24 D. 27 E. 36

26. $\frac{5!}{3!} + \frac{6!}{4!}$

- A. 20 B. 30 C. 40 D. 50 E. 60

BETWEEN

	10 am and 11am	11am and 12 noon	12 noon and 1 pm	1pm 2pm	2 pm 3pm
Buses	+	+++	++++	+++++	++++++
Military Trucks	+	+++++	+++++	+	++++
Cars	++++ +++	+++ +++	++++ +++	+++ ++	++++++ ++++++
Lorries	++	++++	+++	++++	++

- G. The table above shows the number of vehicles which pass in front of University of Lagos Staff School between 10 am and 3 pm at hourly intervals. The symbol + represents one vehicle.



27. How many lorries passed in front of the school between 12 noon and 3 pm?
 A. 4 B. 10 C. 9 D. 8 E. 7
28. How many cars passed in front of the school between 11 am and 2pm?
 A. 19 B. 18 C. 20 D. 25 E. 26
29. Which type of vehicle passed most often in front of the school?
 A. Buses B. Military trunks C. Lorries D. Cars E. All

H. Example:

$$\frac{4}{9} \leftarrow (2) \leftarrow \frac{2}{3} \left(\frac{5}{4} \right) \leftarrow (1) \leftarrow \left(\frac{5}{4} \right)$$

$$\left(\frac{25}{9} \right) \leftarrow (2) \leftarrow \left(\frac{5}{1} \right)$$

30. $\left(\frac{1}{8} \right) \leftarrow (?) \leftarrow \left(\frac{1}{2} \right)$ A. $\frac{1}{2}$
 B. 1 C. 2
 D. 3 E. 4
31. $\left(\frac{36}{16} \right) \leftarrow (2) \leftarrow \left(\frac{6}{?} \right)$ A. $\frac{1}{4}$
 B. 4 C. 8
 D. 16 E. 12
32. $\left(\begin{matrix} 0 \\ ? \end{matrix} \right) \leftarrow (2) \leftarrow \left(\begin{matrix} 0 \\ 4 \end{matrix} \right)$ A. 0
 B. 16 C. 64
 D. 96 E. 100
33. $\left(\frac{9}{16} \right) \leftarrow (2) \leftarrow \left(\frac{3}{7} \right)$ A. 16
 B. 49 C. 64
 D. 81 E. 100
34. $\left(\frac{16}{25} \right) \leftarrow (?) \leftarrow \left(\frac{4}{3} \right)$ A. 16
 B. 3 C. 2
 D. 1 E. 0



I. Example:

$$5N = 20 \quad 2N = 2 \quad 6N3 = 90$$

35. $9N = \square$ A. 81 B. 72 C. 90
D. 100 E. 18
36. $4N5 = \square$ A. 60 B. 20 C. 16
D. 80 E. 70
37. $12N3 = \square$ A. 36 B. 144 C. 132
D. 396 E. 264
38. $15N = \square$ A. 210 B. 225 C. 150
D. 250 E. 60

J. Use the information below to answer questions 39-40:

On a teacher's table were 7 books numbered 1, 2, 3, 4, 5, 6 and 7. Books number 3, 4, and 5 were dictionaries; the others were novels. Books number 1, 3, 5 and 6 were black; the others were green.

39. Black dictionaries were:
A. 3 and 1 B. 3 and 5 C. 3 and 6
D. 4 and 1 E. 4 and 6
40. Green novels were:
A. 7 and 1 B. 4 and 6 C. 4 and 2
D. 2 and 7 E. 1 and 2

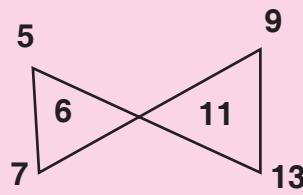
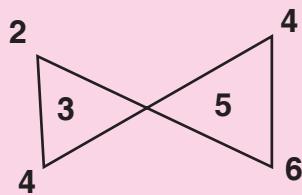


A. Example:

The angle on a straight line is 180° .

The sum of internal angles of any triangle is 180° .

- 1.
-
- A. 60° B. 50° C. 45°
D. 70° E. 80°
- 3.
-
- A. 32° B. 22° C. 42°
D. 52° E. 12°
- 2.
-
- A. 80° B. 40° C. 50°
D. 70° E. 60°
- 4.
-
- A. 50° B. 60° C. 70°
D. 80°

B. Example:

5.
 A. 4
 B. 5
 C. 6
 D. 7
 E. 8
7.
 A. 7
 B. 1
 C. 3
 D. 4
 E. 6
6.
 A. $13\frac{1}{2}$
 B. 13
 C. 9
 D. 10
 E. 11
8.
 A. $3\frac{1}{2}$
 B. 6
 C. $\frac{1}{2}$
 D. $5\frac{1}{2}$
 E. 4

C. Example:

$$\begin{aligned}
 11011_2 &= 1 \times 2^4 + 1 \times 2^3 + 0 \times 2^2 + 1 \times 2^1 + 1 = 27_{10} \\
 243_5 &= 2 \times 5^2 + 4 \times 5^1 + 3 = 73_{10} \\
 102_3 &= 1 \times 3^2 + 0 \times 3^1 + 2 = 11_{10}
 \end{aligned}$$

9. $1101_2 = ?$
 A. 14_{10} B. 13_{10} C. 5_{10} D. 16_{10} E. 17_{10}
10. $243_4 = ?$
 A. 8_{10} B. 16_{10} C. 61_{10} D. 51_{10} E. 9_{10}
11. $10011_2 = ?$
 A. 14_{10} B. 15_{10} C. 18_{10} D. 16_{10} E. 17_{10}
12. $422_5 = ?$
 A. 112_{10} B. 113_{10} C. 143_{10} D. 160_{10} E. 106_{10}
13. $2323_4 = ?$
 A. 311_{10} B. 308_{10} C. 216_{10} D. 187_{10} E. 316_{10}



D. Example:

12	5
11	16
7	2

4	7
6	9
15	12

11	9
13	15
1	3

14.

0.9	0.5
1.8	2.2
0.5	<input type="text"/>

- A. 1.0
B. 0.1
C. 0.8
D. 1.2
E. 0.5

16.

2.3	<input type="text"/>
2.8	2.1
0.8	1.5

- A. 3.0
B. 3.3
C. 3.6
D. 4.4
E. 1.6

15.

20x	10x
<input type="text"/>	14x
17x	27x

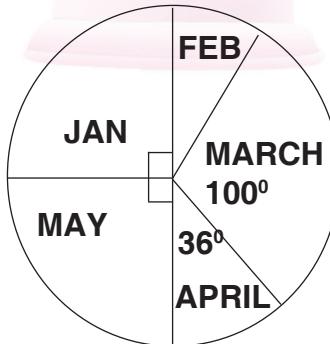
- A. $9x$
B. $28x$
C. $4x$
D. $14x$
E. $24x$

17.

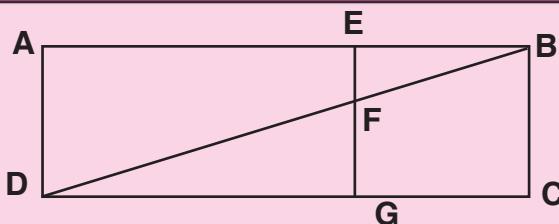
3m	2m
5m	<input type="text"/>
8m	7m

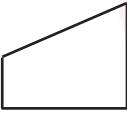
- A. 0
B. 5m
C. 12m
D. 4m
E. 8m

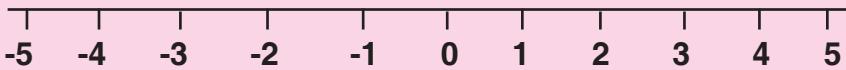
E. The pie chart below shows 720 children born between January and May 2001.



18. How many children were born in January?
 A. 90 B. 810 C. 81 D. 540 E. 180
19. How many children were born in March?
 A. 72 B. 200 C. 100 D. 260 E. 620
20. How many children were born in February?
 A. 44 B. 176 C. 72 D. 88 E. 233
21. How many children were born in the month of April?
 A. 160 B. 80 C. 288 D. 610 E. 72

F. Example:

22. How many rectangles are there in the diagram?
 A. 3 B. 4 C. 2 D. 5 E. 1
23. How many triangles are there?
 A. 3 B. 5 C. 4 D. 2 E. 6
24. The shape  is represented by
 A. AEGD B. EBF C. FBCG D. AEGD E. EBCG

G. Example:

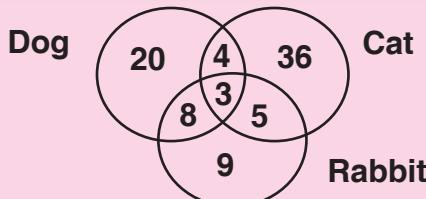
$$\begin{array}{r} -2 \\ -3 \\ \hline -1 \end{array} \quad \begin{array}{r} 1 \\ 5 \\ \hline \end{array} \quad = \quad \begin{array}{r} -3 \\ -2 \\ \hline 4 \end{array}$$



25. $-4 + 5 = ?$
A. 2 B. 0 C. 1 D. -1 E. 3
26. $3 - 4 - 5 = ?$
A. 9 B. 6 C. -12 D. 12 E. -6
27. $3 - 4 + 3 - 2$
A. 0 B. 1 = ? C. -2 D. 2 E. -1
28. $-3 - 2 - 4 = ?$
A. -1 B. 3 C. 9 D. -9 E. -8

H. The diagram gives the number of children in University of Lagos Staff School who keep pets.

H. Example:



29. How many children keep dogs?
A. 20 B. 24 C. 35 D. 36 E. 7
30. How many children keep dogs and rabbits but not cats?
A. 8 B. 37 C. 20 D. 9 E. 6
31. How many children keep dogs, cats and also rabbits?
A. 5 B. 7 C. 4 D. 3 E. 8

I. Study the relationship between the numbers in the following example and use it to answer questions 32 - 35:

I. Example:

Draw digital clock face



$$\boxed{8.15} + \boxed{3} = 11 : 15 \quad \boxed{2} - \boxed{5} = 9$$

$$\boxed{3} + \boxed{2.30} = 5.30$$



- ~234567891011121314151617181920
32. $\boxed{7} + \boxed{7} = \boxed{\quad}$ A. 14 B. 2 C. 12
D. 0 E. 5
33. $\boxed{\quad} - \boxed{5} = 11$ A. 4 B. 16 C. 8
D. 12 E. 6
34. $\boxed{\quad} + \boxed{8} = \boxed{6}$ A. 11 B. 8 C. 10
D. 4 E. 7
35. $\boxed{1} - \boxed{9} = \boxed{\quad}$ A. 13 B. 6 C. 8
D. 4 E. 10

J. ***Study the relationships carefully and use it to answer questions 36 - 38:***

J. Example:



$2 * 4 = 4;$

$6 * 5 = 15;$

$6 * 8 = 24$

36. Find the value of $3 * 9$
A. 3 B. $13\frac{1}{2}$ C. 12
D. 27 E. 36

37. Find the value of the empty box

$\boxed{\quad} * 12 = 48$

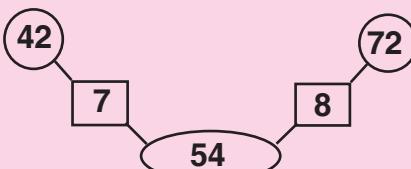
- A. 2 B. 4 C. 8
D. 16 E. 24

38. Find the value of $(3 * 2) * 4$
A. 4 B. 6 C. 12
D. 24 E. 36





A. Example:



1.
A. 11 B. 20 C. 99
D. 28 E. 7

2.
A. 88 B. 132 C. 27
D. 78 E. 11

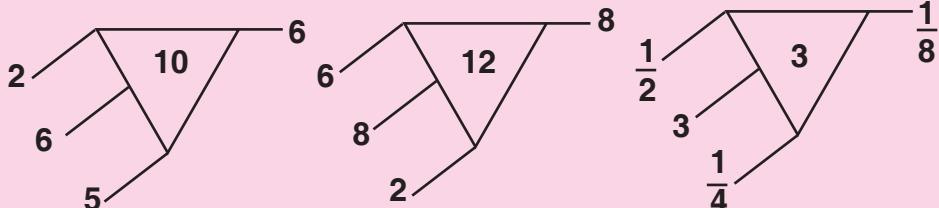
3.
A. 25 B. 4 C. 240
D. 55 E. 60

4.
A. 60 B. 12 C. 15
D. 50 E. 25



Example:

B. Study the relationship between the numbers in the following example and answer questions 5 - 8:



5. ?
- A. 6 B. 4 C. $\frac{2}{3}$
 D. $\frac{1}{4}$ E. $\frac{1}{6}$
7. ?
- A. 25 B. 6 C. 3
 D. $\frac{1}{8}$ E. $\frac{1}{3}$

6. ?
- A. $\frac{3}{4}$ B. $1\frac{1}{5}$ C. 2
 D. 4 E. 8
8. ?
- A. $\frac{1}{3}$ B. $5\frac{1}{3}$
 C. $6\frac{2}{3}$ D. 8
 E. 72



C. Example:

$$2 \wedge 3 = 2 + (2 \times 3) = 8$$

$$1 \wedge 4 = 1 + (1 \times 4) = 5$$

$$3 \vee 2 = (3 \times 2) - 2 = 4$$

$$4 \vee 1 = (4 \times 1) - 1 = 3$$

Study and use the example above to answer questions 9-12:

9. $5 \wedge 4 = ?$

- A. 9 B. 15 C. 20 D. 25 E. 100

10. $? \vee 3 = 9$

- A. 4 B. 10 C. 18 D. 28 E. 63

11. $\frac{2 \wedge 6}{3 \vee 4} = ?$

- A. $\frac{1}{4}$ B. $\frac{14}{15}$ C. 1 D. $1\frac{3}{4}$ E. 4

12. $\frac{7 \wedge 4}{2 \vee 1} = ?$

- A. 42 B. $17\frac{1}{2}$ C. $7\frac{1}{2}$ D. 35 E. 2



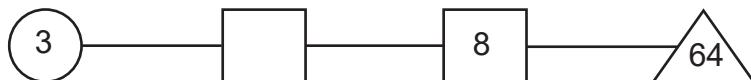
D. Study the above carefully and use it to answer questions 13 and 14.

13.

- A. 252 B. 91 C. 54 D. 48 E. 7



14.



- A. 11 B. 24 C. $31\frac{1}{3}$ D. 72 E. 75

E. Study the example below and use it to answer questions 15-18.

E. Example:



$$25 \text{ T } 4 = 1$$

$$65 \text{ T } 7 = 2$$

$$16 \text{ T } 9 = 7$$

15. $15 \text{ T } 3 = \square$ A. 5 B. 0 C. 3

- D. 7 E. 10

16. $\square \text{ T } 8 = 6$ A. 70 B. 64 C. 48

- D. 52 E. 12

17. $3 \text{ T } \square = 1$ A. 6 B. 1 C. 5

- D. 2 E. 0

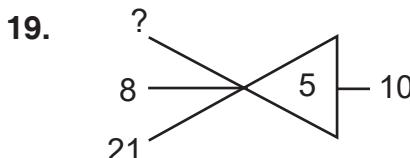
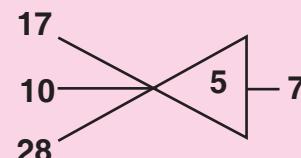
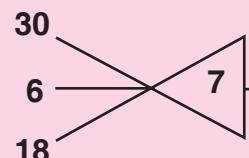
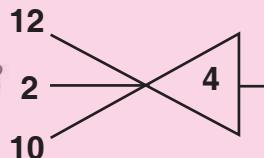
18. $1.2 \text{ T } 0.25 = \square$ A. 1 B. 0.5 C. 6

- D. 0.8 E. 0.2

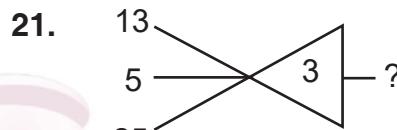


F. Find the relationship in the example below and use it to answer questions 19-22.

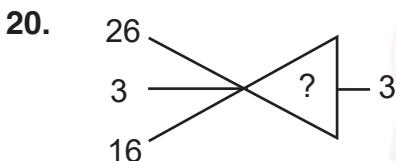
F. Example:



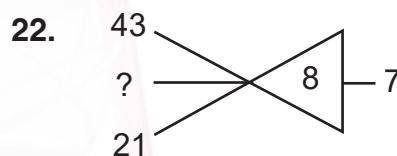
- A. 37 B. 44 C. 63
D. 79 E. 87



- A. 5 B. 7 C. 11
D. 14 E. 20

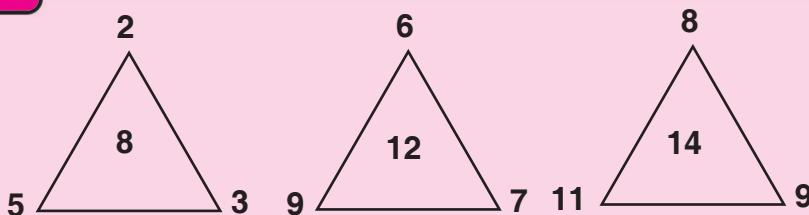


- A. 4 B. 10 C. 11
D. 13 E. 16

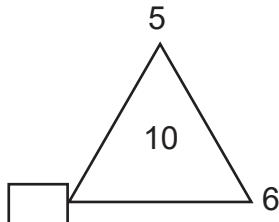


- A. 7 B. 8 C. 15
D. 23 E. 37

G. Example:

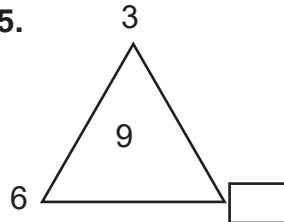


23.



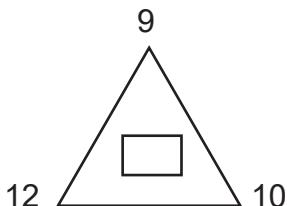
- A. 7
B. 8
C. 9
D. 10
E. 12

25.



- A. 4
B. 5
C. 6
D. 7
E. 8

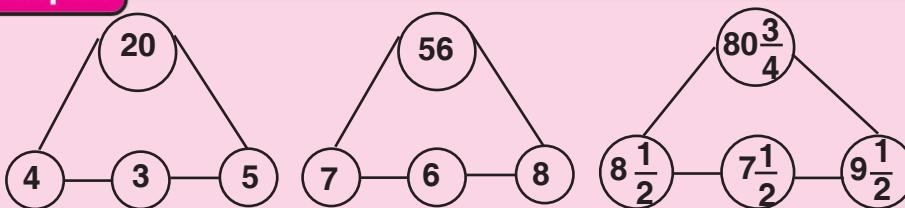
24.



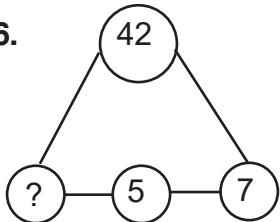
- A. 13
B. 14
C. 15
D. 16
E. 17

Use the example below to answer questions 26 - 29:

H. Example:

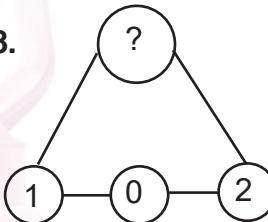


26.



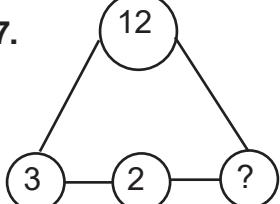
- A. 5
B. 6
C. 7
D. 35
E. 42

28.



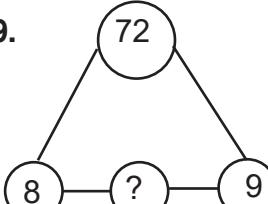
- A. 0
B. 1
C. 2
D. 3
E. 4

27.



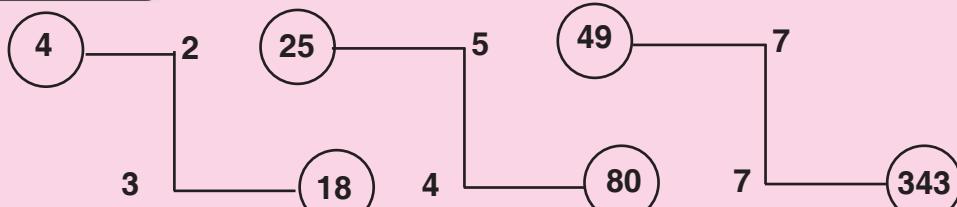
- A. 2
B. 3
C. 4
D. 5
E. 12

29.

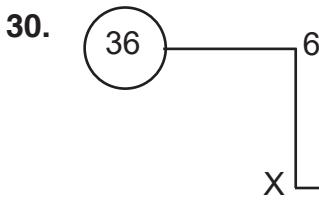


- A. 7
B. 8
C. 9
D. 47
E. 48

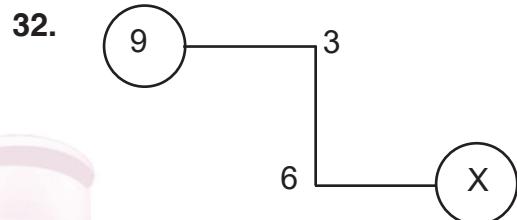


I. Example:

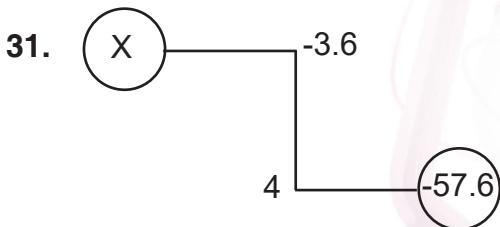
Use the above example to answer questions 30 - 32.



- A. 6 B. 9 C. 11
D. 36 E. 108



- A. 18 B. 27 C. 36
D. 54 E. 108



- A. -12.96 B. -12.40 C. 12.40
D. 12.96 E. 14.40

J. Example:

If $a \downarrow b = ab$ and $a \uparrow b = \frac{a}{b}$

then $a \downarrow b \uparrow b = a$.

33. $16 \downarrow ? \uparrow 10 = 8$ A. 34 B. 26 C. 18
D. 16 E. 5



34. $\frac{1}{3} \downarrow 9 \uparrow 9 = ?$

- A. 27 B. 9 C. 3
D. $\frac{1}{3}$ E. $\frac{1}{9}$

35. $24 \uparrow ? = 6$

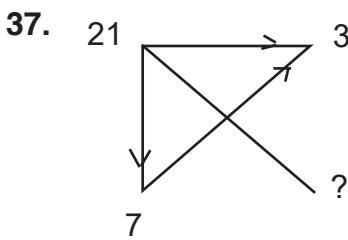
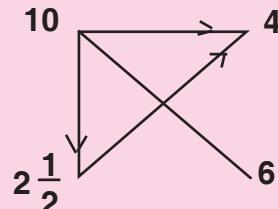
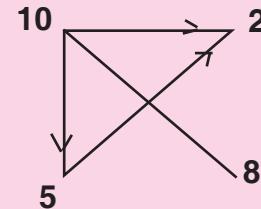
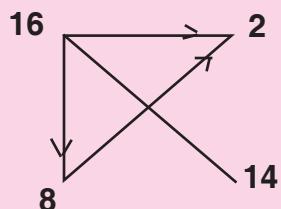
- A. 30 B. 18 C. 4
D. $\frac{1}{4}$ E. $\frac{3}{18}$

36. $2 \downarrow \frac{1}{2} = ?$

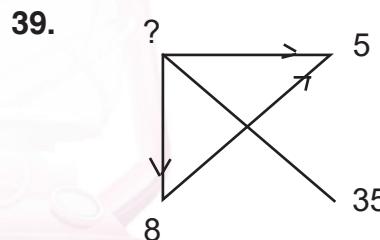
- A. $\frac{1}{4}$ B. $\frac{1}{2}$ C. 1
D. $\frac{1}{2}$ E. $\frac{1}{4}$

K. Use the information below to answer questions 37 - 40:

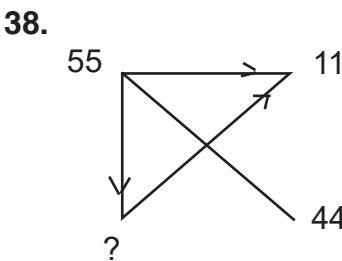
K. Example:



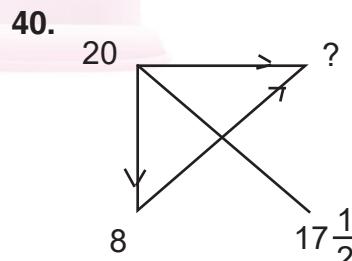
- A. 3
B. 7
C. 18
D. 21
E. 28



- A. 3
B. 13
C. 16
D. 30
E. 40

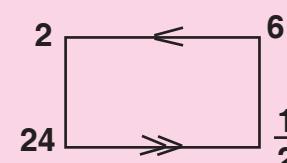
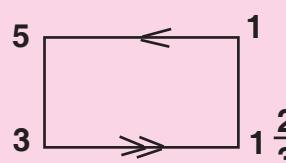
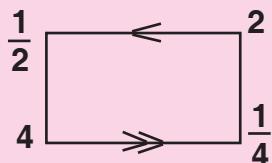


- A. 5
B. 11
C. 44
D. 55
E. 66

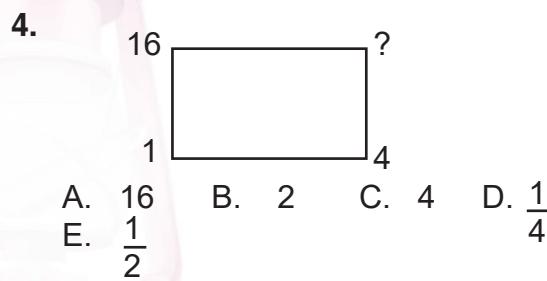
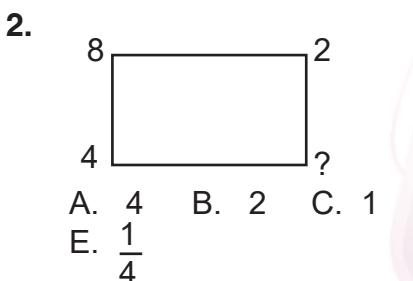
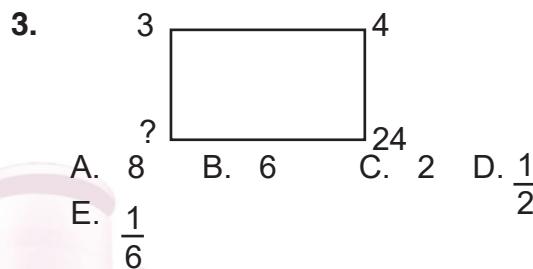
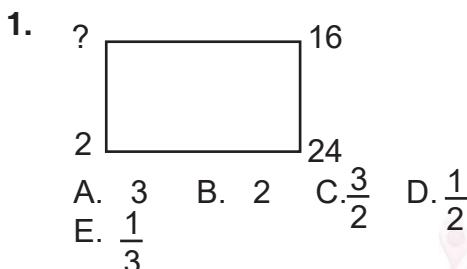
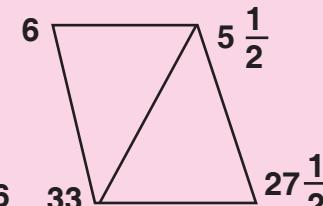
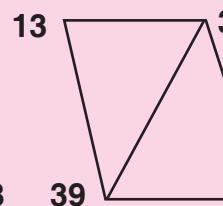
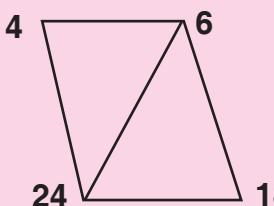


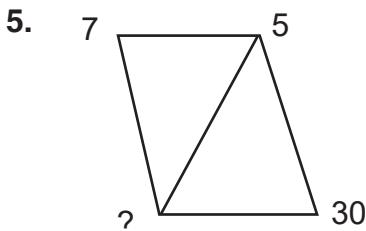
- A. $37\frac{1}{2}$
B. 28
C. $17\frac{1}{2}$
D. 8
E. $2\frac{1}{2}$



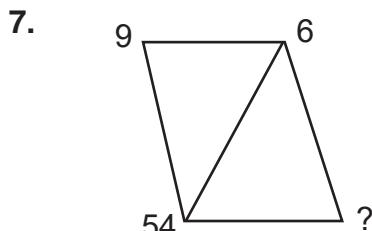
A. Example:

A. Use the example above to answer questions 1 to 4:

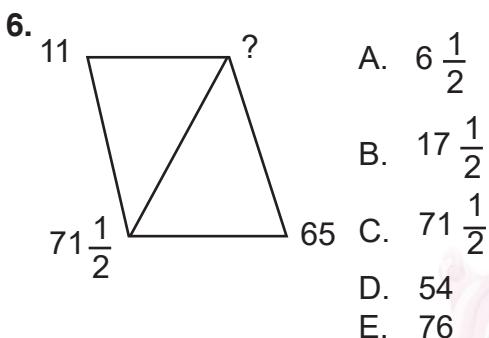
**B. Example:**

B. Use the example above to answer questions 5 to 8:

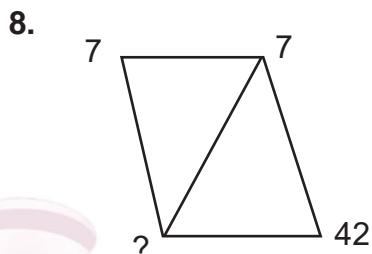
- A. 2
B. 12
C. 30
D. 35
E. 65



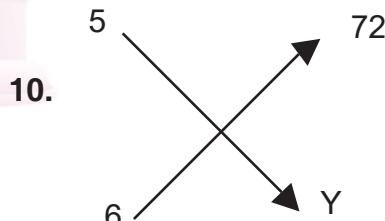
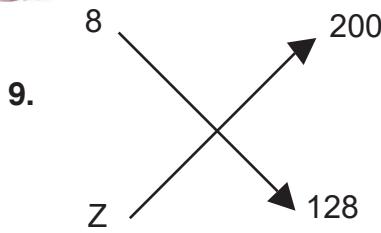
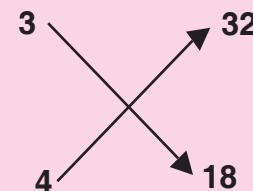
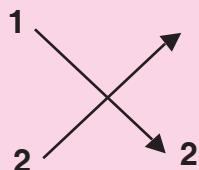
- A. 6
B. 15
C. 48
D. 54
E. 60



- A. $6\frac{1}{2}$
B. $17\frac{1}{2}$
C. $71\frac{1}{2}$
D. 54
E. 76



- A. 14
B. 35
C. 42
D. 49
E. 56

C. Use the example below to answer questions 9 to 11:**C. Example:**

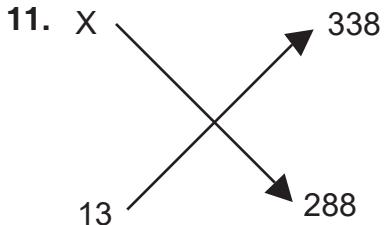
What is the value of Z?

- A. 7 B. 9 C. 10
D. 12 E. 15

Find the value of Y.

- A. 60 B. 50 C. 40
D. 30 E. 20





Determine the value of X from the sketch.

- A. 19 B. 16 C. 14 D. 13
E. 12

D. Use the example below to answer questions 12 to 15:

D. Example:



6, 6, 5, 7, 3, 4, 1, 3, 2, 6, 8, 9

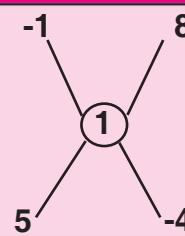
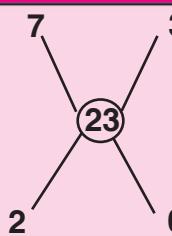
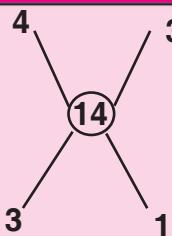
$m = 5 \quad d = 6 \quad n = 5.5$

12. 10, 11, 9, 7, 4, 8, 7 m =
A. 9 B. 8 C. 10 D. 11 E. 6.5
13. 24, 19, 26, 17, 20 n =
A. 24 B. 19 C. 26 D. 17 E. 20
14. 2, 2, 3, 5, 8, 7, 2, 6, 3 d =
A. 2 B. 3 C. 6 D. 8 E. 7
15. 8, 21, 14, 15, 8, 25, 7 d =
A. 14 B. 7 C. 8 D. 15 E. 21

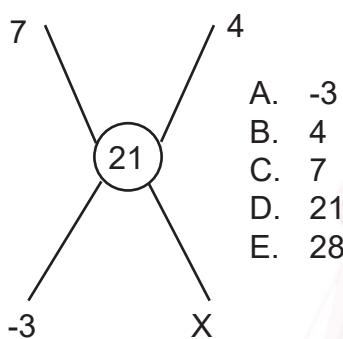


E. Use the example below to answer questions 16 - 18:

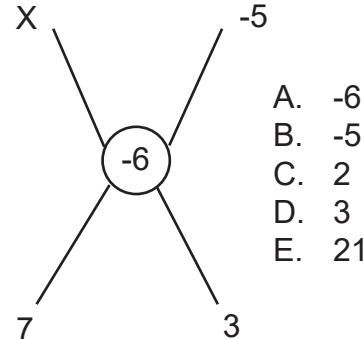
E. Example:



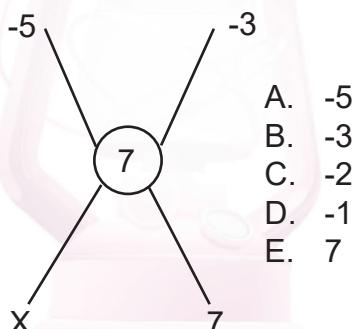
16.



17.



18.



F. Example:



1	4
4	4

2	6
3	12

$\frac{1}{2}$	3
6	$1\frac{1}{2}$



19.

$2\frac{1}{2}$	9
?	$22\frac{1}{2}$

- A. $5\frac{1}{3}$ B. $4\frac{1}{7}$ C. 4 D. $3\frac{6}{7}$ E. $3\frac{3}{5}$

20.

2	?
4	16

- A. 12 B. 10 C. 8 D. 6 E. 4

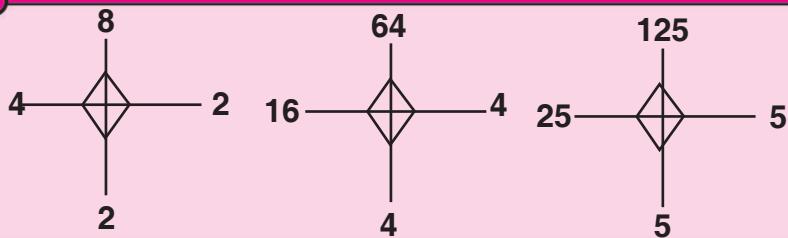
21.

$\frac{1}{8}$	$\frac{5}{4}$
10	?

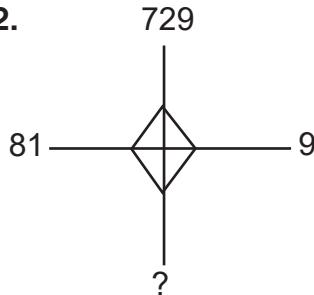
- A. $7\frac{1}{2}$ B. $\frac{5}{32}$ C. $\frac{2}{5}$ D. $\frac{1}{4}$ E. 0

G. Use the example below to answer questions 22 to 25:

G. Example:

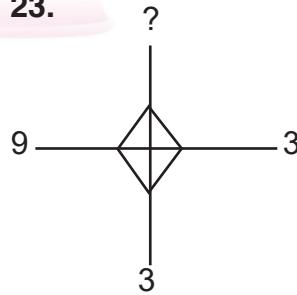


22.



- A. 90
B. 89
C. 64
D. 9
E. 729

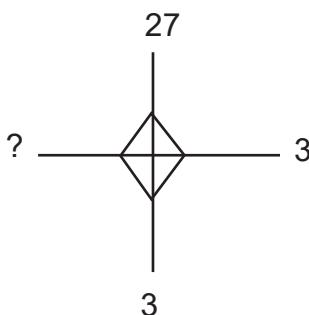
23.



- A. 135
B. 125
C. 45
D. 27
E. 15

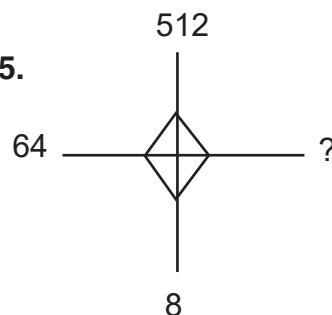


24.



- A. 16
B. 12
C. 9
D. 3
E. 2

25.



- A. 64
B. 32
C. 16
D. 8
E. 4

H. Study the example carefully and use them to answer questions 26 to 28:

H. Example:



$$\begin{array}{|c c|} \hline 3 & 4 \\ \hline 6 & 9 \\ \hline \end{array} = 3, \quad \begin{array}{|c c|} \hline 2 & 5 \\ \hline 4 & 15 \\ \hline \end{array} = 10, \quad \begin{array}{|c c|} \hline 1\frac{1}{2} & 2 \\ \hline 2 & 3\frac{1}{4} \\ \hline \end{array} = \frac{7}{8}$$

26.

What is the value of F?

$$\begin{array}{|c c|} \hline 2.5 & 5.2 \\ \hline & F \\ \hline 6.5 & 15.9 \\ \hline \end{array}$$

- A. 5.95
B. 6.70
C. 8.10
D. 12.10
E. 15.30

27.

Find the value of x if

$$\begin{array}{|c c|} \hline 8 & 10 \\ \hline & = 0 \\ \hline 12 & x \\ \hline \end{array}$$

- A. 35
B. 25
C. 20
D. 15
E. 10

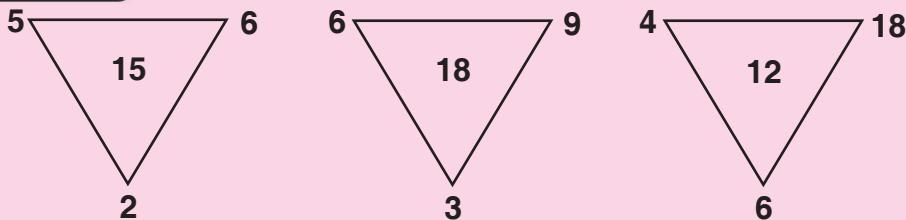


28. If $\begin{array}{|c|c|} \hline & 12 \\ \hline & 9 \\ \hline C & 9 \\ \hline \end{array} = 27$ Find the value of C.

A. 12
B. 9
C. 6
D. 5
E. 3

I. Use the example below to answer questions 29 to 31:

I. Example:



29. $\begin{array}{c} 6 \\ ? \\ 13 \end{array}$

- A. 78
B. 18
C. 15.6
D. 7
E. 9

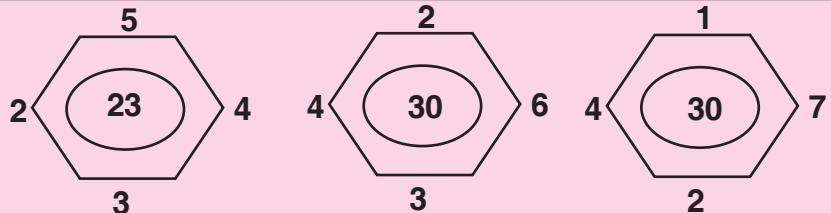
31. $\begin{array}{c} 10 \\ ? \\ 25 \end{array}$

- A. 1
B. 5
C. 10
D. 25
E. 30

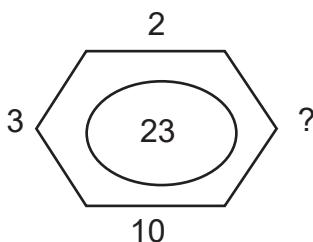
30. $\begin{array}{c} 12 \\ ? \\ 8 \end{array}$

- A. 2
B. 4
C. 6
D. 16
E. 28



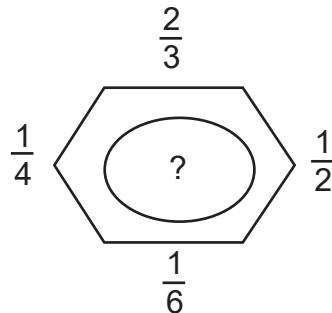
**J. Example:**

32.



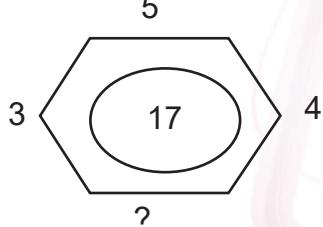
- A. 8 B. 7 C. 6 D. 5 E. 1

34.



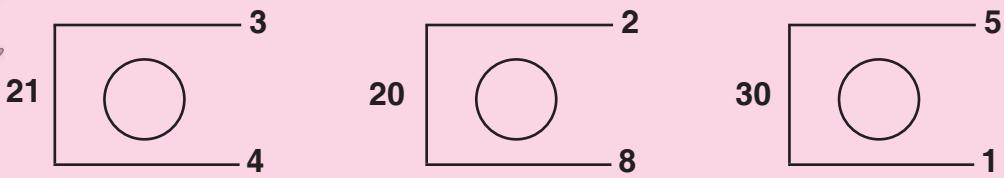
- A. $1\frac{1}{2}$ B. $\frac{1}{6}$ C. $\frac{3}{4}$ D. $\frac{5}{6}$ E. $\frac{17}{72}$

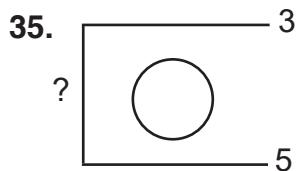
33.



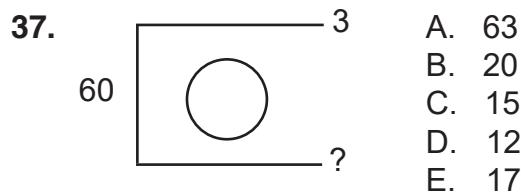
- A. 1 B. 2 C. 5 D. 12 E. 17

K. Study the example below and use them to answer questions 35 to 38:

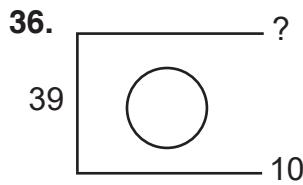
**K. Example:**



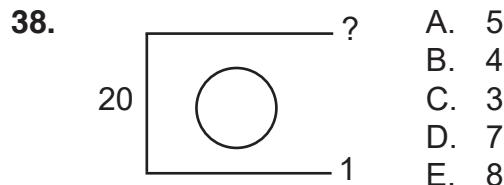
- A. 8
B. 13
C. 30
D. 24
E. 150



- A. 63
B. 20
C. 15
D. 12
E. 17



- A. 43
B. 34
C. 13
D. 3
E. 1



- A. 5
B. 4
C. 3
D. 7
E. 8

L. Study the example below and use them to answer questions 39 to 40:



L. Example:

$$\begin{array}{rcl} 5 & \xrightarrow{\hspace{1cm}} & 2 = 7 \\ 5 & \xleftarrow{\hspace{1cm}} & 3 = 2 \end{array} \quad \begin{array}{rcl} 6 & \xrightarrow{\hspace{1cm}} & 2 = 12 \\ 18 & \xleftarrow{\hspace{1cm}} & 3 = 6 \end{array}$$

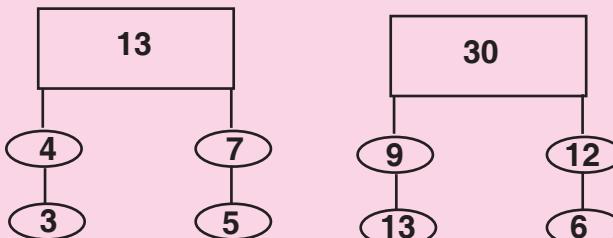
39. $1001 \xrightarrow{\hspace{1cm}} 101$

- A. 201 B. 900 C. 1001 D. 1102 E. 2011

40. $15 \xrightarrow{\hspace{1cm}} 3 \xleftarrow{\hspace{1cm}} 5$

- A. 1 B. 9 C. 21 D. 25 E. 60



A. Example:

- 1.
- A. 24
B. 33
C. 57
D. 28
E. 37
- 4.
- A. 0
B. $\frac{1}{2}$
C. 3
D. 1
E. 2
- 2.
- A. 2
B. 15
C. 8
D. 16
E. 32
- 5.
- A. 900
B. 80
C. 45
D. 100
E. 60
- 3.
- A. 30
B. 25
C. 68
D. 71
E. 63



B. Example:

$$20 \longleftrightarrow 4 \quad 7 \longleftrightarrow 15 \quad 100 \longleftrightarrow 24$$

$$16 \longleftrightarrow 9 \quad 8 \longleftrightarrow 1 \quad 44 \longleftrightarrow 6$$

6. $12 \longleftrightarrow \boxed{}$

9. $60 \longleftrightarrow \boxed{}$

$$18 \longleftrightarrow 6$$

$$40 \longleftrightarrow 25$$

- A. 4 B. 1 C. 5
D. 6 E. 8

- A. 1 B. 4 C. 400
D. 40 E. $\frac{1}{4}$

7. $30 \longleftrightarrow 9$

10. $40 \longleftrightarrow 20$

$$\boxed{} \longleftrightarrow 7$$

$$\boxed{} \longleftrightarrow 5$$

- A. 33 B. 30 C. 6
D. 5 E. 20

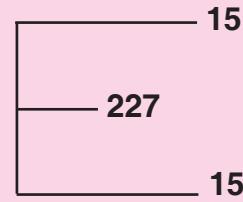
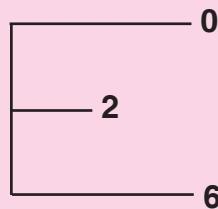
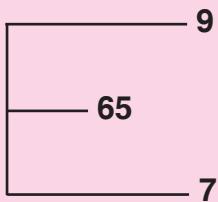
- A. 60 B. 4 C. 120
D. 4 E. 40

8. $12 \longleftrightarrow 24$

- A. 12 B. 0 C. 2

$$\boxed{} \longleftrightarrow 0.5$$

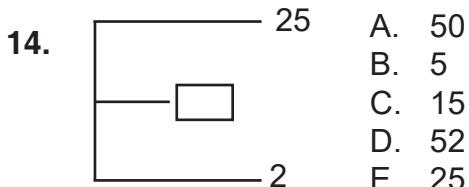
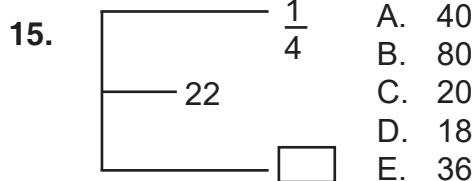
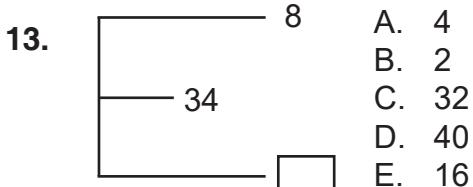
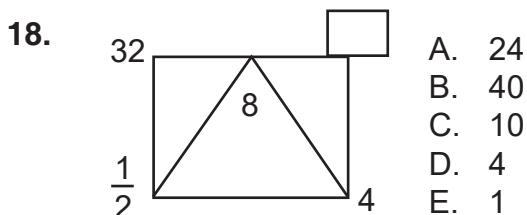
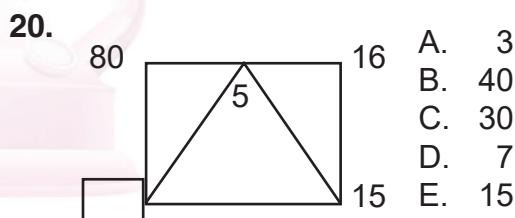
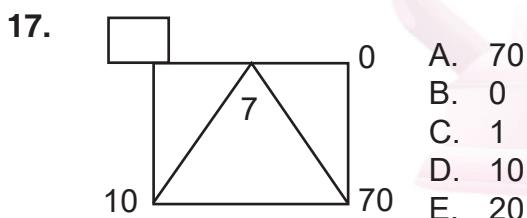
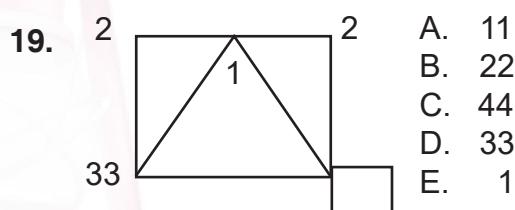
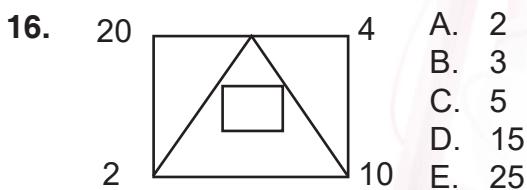
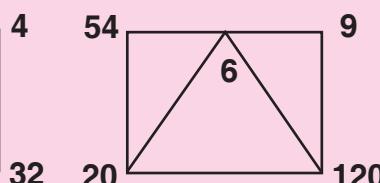
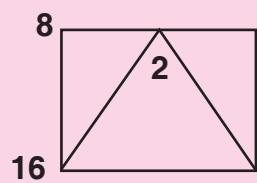
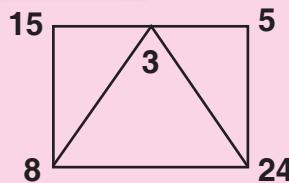
- D. 1 E. 5

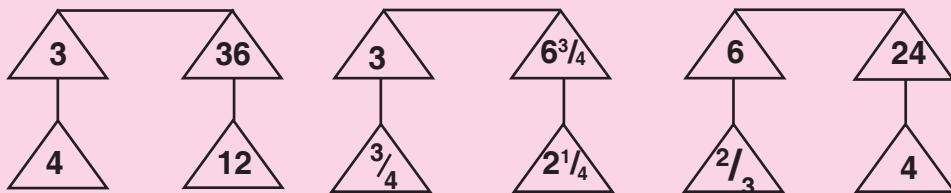
C. Example:

11. $\boxed{} \longleftrightarrow 2$
A. 5
B. 6
C. 1
D. 3
E. 4

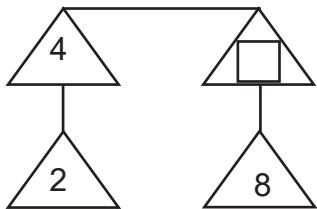
12. $\boxed{} \longleftrightarrow 47$
A. 4
B. 3
C. 5
D. 10
E. 13



**D. Example:**

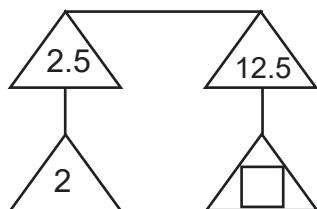

E. Example:


21.



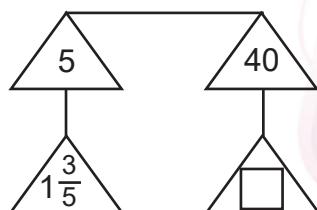
- A. 8 B. 16 C. 32
D. 64 E. 2

24.



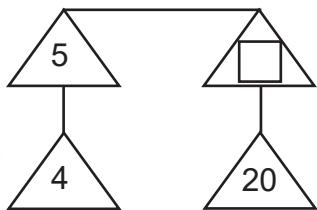
- A. 5 B. 4.5 C. 2.5
D. 6.25 E. 25

22.



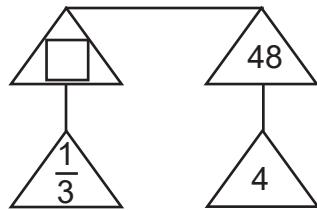
- A. 8 B. 16 C. 32
D. $\frac{1}{8}$ E. $\frac{1}{5}$

25.



- A. 25 B. 50 C. 40
D. 100 E. 50

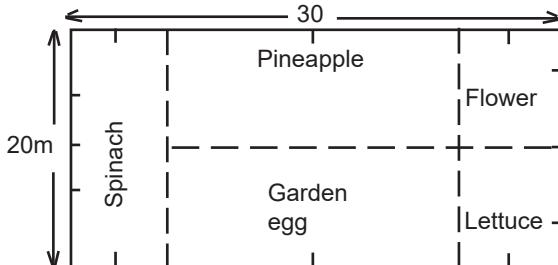
23.



- A. $\frac{1}{4}$ B. 3 C. 4
D. 12 E. 18



F. Below is a diagram of a garden. Use this to answer questions 26 - 30.



26. What is the area of the garden? _____
27. What fraction of the garden is used for growing flower? _____
28. What is the area of the space used for growing lettuce? _____
29. What is the perimeter of the garden? _____
30. What fraction of the garden is used for growing spinach? _____

G. Example:



28	$3\frac{1}{2}$	$\frac{1}{4}$	$\frac{1}{32}$	$.125$
14	7	$\frac{1}{8}$	$\frac{1}{16}$	0.5

31.

<input type="checkbox"/>	6	$\frac{3}{4}$
	$1\frac{1}{2}$	
	$E.$	$1\frac{1}{4}$

- A. $1\frac{1}{2}$
- B. 2
- C. 3
- D. $\frac{5}{8}$
- E. $1\frac{1}{4}$

32.

140	70	140	$17\frac{1}{2}$	$A.$
		<input type="checkbox"/>		20

- A. 20
- B. 18
- C. 17
- D. 16
- E. 35



33. $\frac{1.5}{.75} \quad \frac{\square}{.5}$

A. 0.35
B. .25
C. 0.3
D. .025
E. .0035

35. $\frac{\square}{19.2} \quad \frac{4.8}{9.6}$

A. 38.4
B. 448
C. 67.2
D. 54.8
E. 58.8

34. $\frac{15}{7\frac{1}{2}} \quad \frac{\frac{1}{4}}{\square}$

A. 4
B. $\frac{1}{8}$
C. 8
D. $\frac{1}{2}$
E. 2

H. Example:

4	7	5
6	3	5

6	9	8
12	9	10

7	8	11
9	8	5

36. $\frac{9}{10} \quad \frac{7}{\square} \quad \frac{5}{14}$

A. 10
B. 11
C. 12
D. 13
E. 14

39. $\frac{75k}{25k} \quad \frac{62k}{38k} \quad \frac{80k}{\square}$

A. 20k
B. 15k
C. 10k
D. 5k
E. 2k

37. $\frac{\frac{1}{3}}{\frac{2}{3}} \quad \frac{\frac{1}{6}}{\square} \quad \frac{\frac{1}{12}}{\frac{11}{12}}$

A. $\frac{2}{3}$
B. $\frac{1}{3}$
C. $\frac{3}{6}$
D. $\frac{4}{6}$
E. $\frac{5}{6}$

40. $\frac{9dm}{\square} \quad \frac{7dm}{3dm} \quad \frac{4dm}{6dm}$

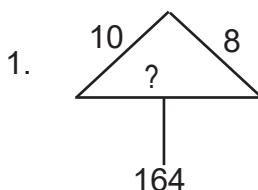
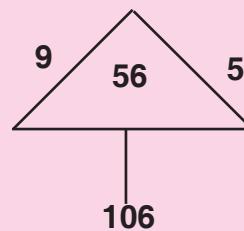
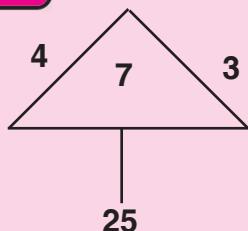
A. 20k
B. 15k
C. 10k
D. 5k
E. 2k

38. $\frac{.5}{.7} \quad \frac{\square}{.9} \quad \frac{1}{.2}$

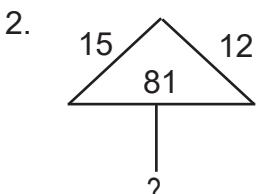
A. 1
B. 2
C. .3
D. 4
E. 5

A. 7dm
B. 6dm
C. 1dm
D. 2dm
E. 4dm

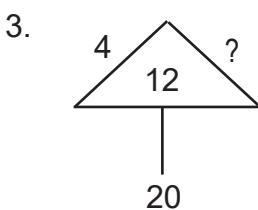


A. Example:

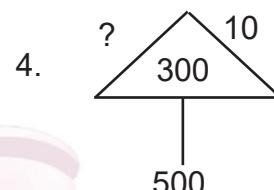
- A. 18
B. 36
C. 84
D. 80
E. 42



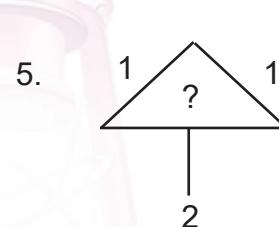
- A. 369
B. 90
C. 49
D. 360
E. 180



- A. 24
B. 16
C. 32
D. 3
E. 2



- A. 20
B. 40
C. 50
D. 10
E. 30



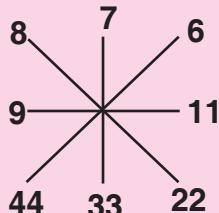
- A. $\frac{1}{2}$
B. 0
C. $\frac{1}{3}$
D. 4
E. 3

B. Example:

$$\begin{array}{rcl} T & \boxed{7} & = 7 + 8 = 15 \\ T & \boxed{2} & = 2 + 3 = 5 \\ T & \boxed{4} & = 4 + 5 = 9 \end{array}$$

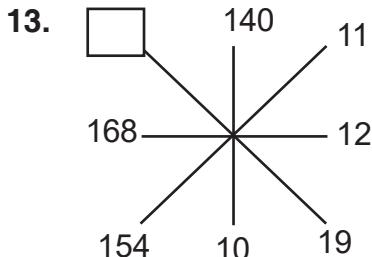


6. $T \boxed{?} = 25$
 A. 51 B. 50 C. 26 D. 13 E. 12
7. $T \boxed{10} = \boxed{}$
 A. 9 B. 10 C. 11 D. 20 E. 21
8. $T \boxed{50} = \boxed{}$
 A. 49 B. 50 C. 51 D. 100 E. 101
9. $T \boxed{10} + T \boxed{11} = \boxed{?}$
 A. 21 B. 22 C. 43 D. 44 E. 45
10. $T \boxed{9} - T \boxed{8} = \boxed{}$
 A. 1 B. 2 C. 8 D. 10 E. 20

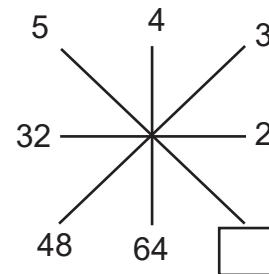
C. Example:

11. $\boxed{?} + 63 + 70 + 1 + 77 + 2 + 3 + 4 =$
 A. 50 B. 52 C. 54 D. 56 E. 58
12. $\boxed{?} + 7 + 8 + 180 + 160 + 140 + 120 =$
 A. 2 B. 6 C. c D. d E. 5



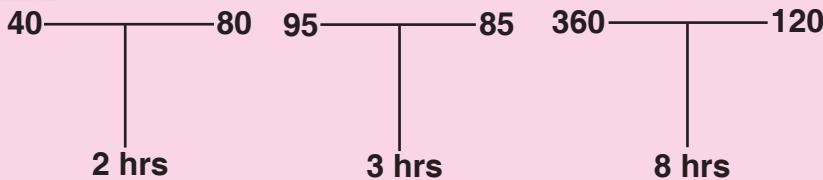


- A. 266
B. 136
C. 116
D. 128
E. 218

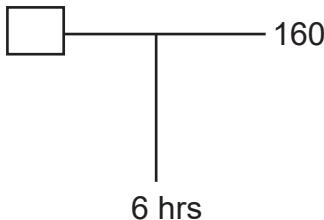


- A. 70
B. 80
C. 40
D. 52
E. 60

D. Example:

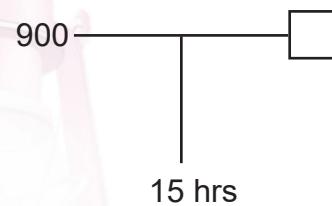


15.



- A. 240
B. 200
C. 360
D. 120
E. 100

16.

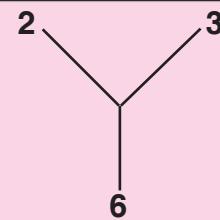
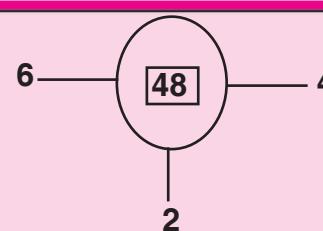


- A. 840
B. 800
C. 600
D. 120
E. 0

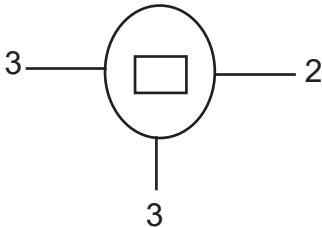
E. Example:



$$\begin{array}{ccc} 1 & \diagdown & 6 \\ & \diagup & \\ 2 & & 3 \end{array} = 27$$

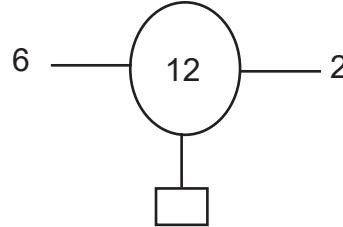


17.



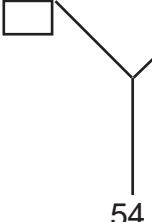
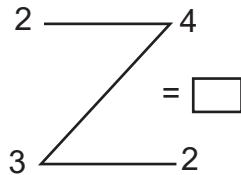
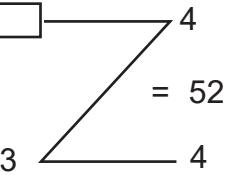
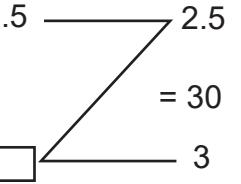
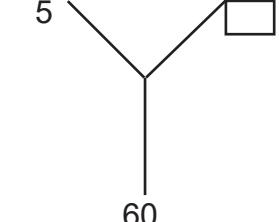
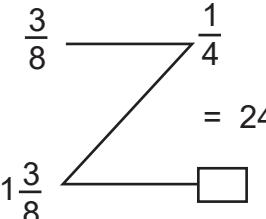
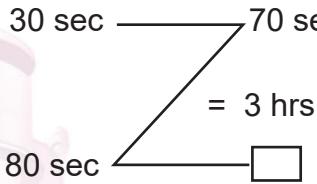
- A. 21
B. 18
C. 30
D. 11
E. 45

18.

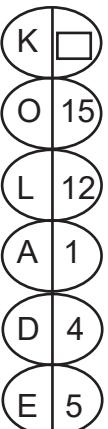
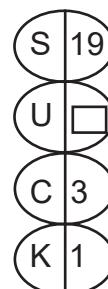


- A. 7
B. 5
C. 4
D. 3
E. 1



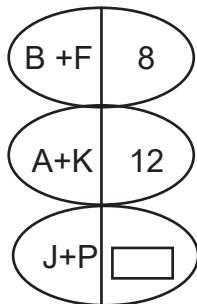
19.  A. 31
B. 20
C. 7
D. 6
E. 4
20.  A. 11
B. 48
C. 14
D. 18
E. 19
21.  A. 24
B. 4
C. 2
D. 6
E. 9
22.  A. 3
B. 8
C. 6
D. 10
E. 4
23.  A. 24
B. 65
C. 55
D. 12
E. 6
24.  A. 9
B. 8
C. 11
D. 10
E. 12
25.  A. 50
B. 40
C. 30
D. 60
E. 20

F. Find the missing figures in no 26 - 32:

26.  A. 19
B. 20
C. 11
D. 22
E. 23
27.  A. 19
B. 20
C. 21
D. 22
E. 23



28.



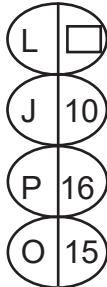
- A. 25
B. 26
C. 24
D. 27
E. 28

31.



- A. 16
B. 12
C. 13
D. 14
E. 15

29.



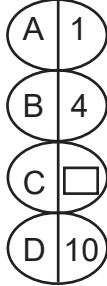
- A. 12
B. 13
C. 14
D. 11
E. 15

32.

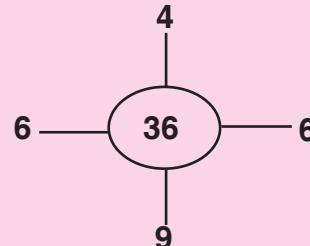
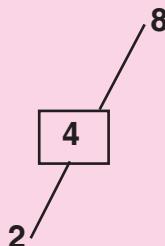


- A. 20
B. 17
C. 18
D. 19
E. 21

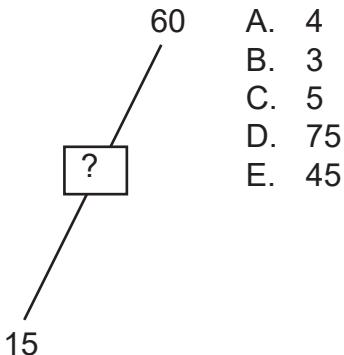
30.



- A. 6
B. 7
C. 8
D. 9
E. 10

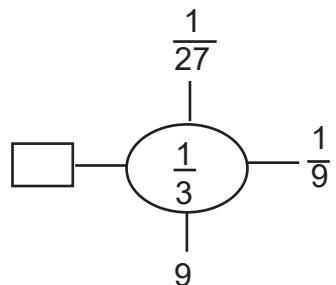
G. Example:

33.



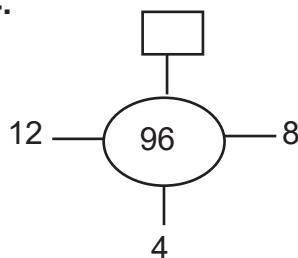
- A. 4
B. 3
C. 5
D. 75
E. 45

37.



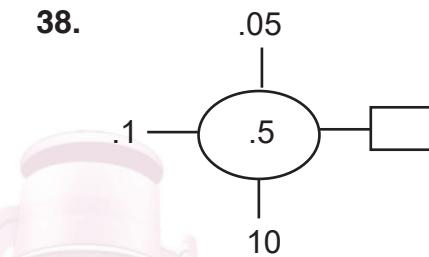
- A. $\frac{1}{3}$
B. 3
C. 9
D. $\frac{1}{9}$
E. $\frac{1}{6}$

34.



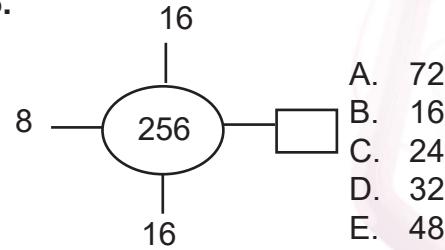
- A. 24
B. 36
C. 18
D. 48
E. 16

38.



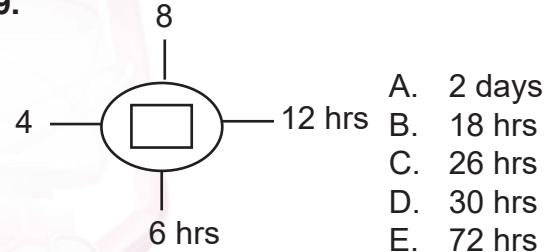
- A. 50
B. 5
C. .05
D. 1.5
E. 2.5

35.



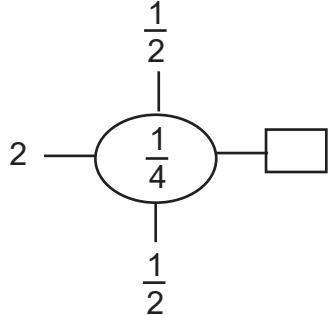
- A. 72
B. 16
C. 24
D. 32
E. 48

39.



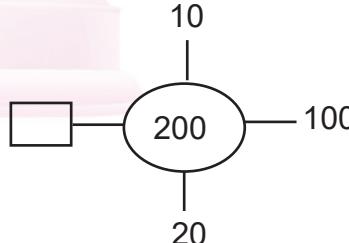
- A. 2 days
B. 18 hrs
C. 26 hrs
D. 30 hrs
E. 72 hrs

36.



- A. $\frac{1}{4}$
B. $\frac{1}{6}$
C. $\frac{1}{8}$
D. $\frac{1}{2}$
E. 4

40.



- A. 2
B. 10
C. 20
D. 5
E. 0

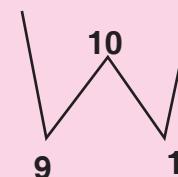
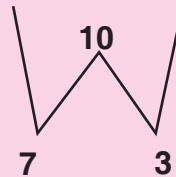
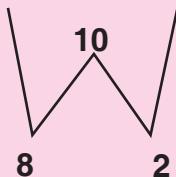


A. Example:

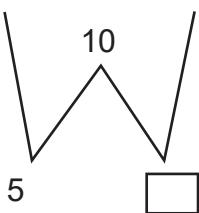
12	15	36
20	8	26
22	3	17

- | | | |
|----|----|----|
| 4 | 6 | ? |
| 18 | 11 | 31 |
| 12 | 7 | 20 |
1. A. 20
B. 14
C. 10
D. 24
E. 11
- | | | |
|----|----|----|
| 16 | 20 | 48 |
| 2 | 2 | ? |
| 4 | 1 | 4 |
2. A. 3
B. 4
C. 1
D. 5
E. 8
- | | | |
|----|----|----|
| 28 | 13 | 40 |
| 60 | 5 | 40 |
| 90 | 15 | ? |
3. A. 75
B. 80
C. 115
D. 125
E. 65
- | | | |
|----|---|----|
| 2 | 1 | 3 |
| 6 | ? | 9 |
| 20 | 9 | 28 |
4. A. 5
B. 8
C. 3
D. 6
E. 4
- | | | |
|----|----|----|
| 20 | 19 | 48 |
| 10 | 15 | 35 |
| ? | 13 | 34 |
5. A. 10
B. 30
C. 16
D. 18
E. 19
- | | | |
|----|---|----|
| 44 | ? | 30 |
| 14 | 9 | 25 |
| 34 | 8 | 33 |
6. A. 8
B. 10
C. 4
D. 12
E. 2
- | | | |
|----|----|----|
| 24 | 11 | 34 |
| 4 | 12 | 26 |
| 50 | ? | 37 |
7. A. 6
B. 10
C. 15
D. 8
E. 17
- | | | |
|----|----|----|
| 26 | 3 | ? |
| 40 | 13 | 46 |
| 30 | 20 | 55 |
8. A. 9
B. 27
C. 5
D. 20
E. 18



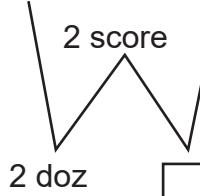
B. Example:

9.



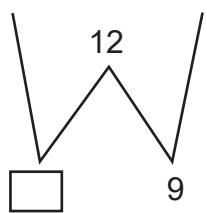
- A. 15
B. 3
C. 4
D. 6
E. 5

12.



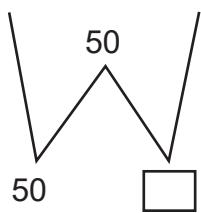
- A. 32
B. 14
C. 26
D. 24
E. 16

10.



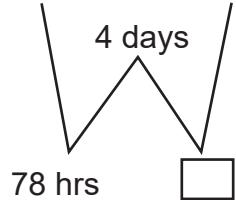
- A. 3
B. 21
C. 4
D. 5
E. $\frac{3}{4}$

13.



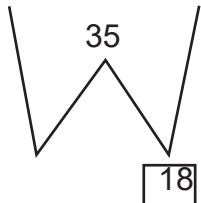
- A. 1.1
B. 1.01
C. 0.01
D. 0
E. 100

11.



- A. 8 hrs
B. 20 hrs
C. 18 hrs
D. 12 hrs
E. 1 day

14.



- A. 26
B. 17
C. 14
D. 21
E. 11

C. Example:

$$\mathbf{S}_1 = 1, \quad \mathbf{S}_2 = 12, \quad \mathbf{S}_3 = 123, \quad \mathbf{S}_4 = 1234$$

$$15. \quad \mathbf{S}_2 + \mathbf{S}_3 = \boxed{}$$

- A. 243 B. 145 C. 135 D. 126 E. 127



16. $S_1 + S_2 = \boxed{}$

- A. 23 B. 13 C. 14 D. 24 E. 123

17. $S_5 - S_3 = \boxed{}$

- A. 12,222 B. 12,022 C. 12,122 D. 12,002 E. 12,112

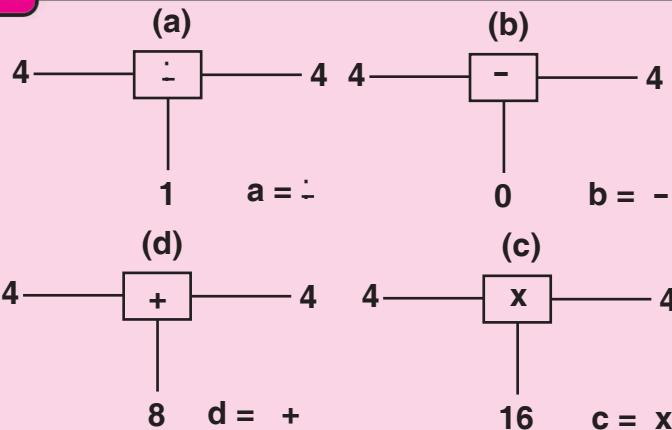
18. Find the value of $S_1 \times S_2 = \boxed{}$

- A. 12 B. 132 C. 13 D. 24 E. 15

19. $S_5 + 100 = \boxed{}$

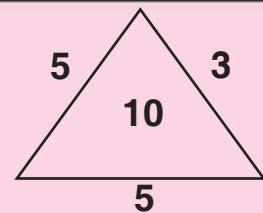
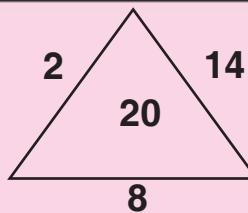
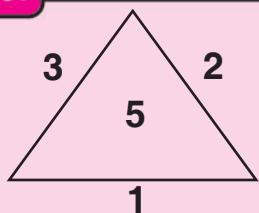
- A. 2,1015 B. 102445 C. 12445 D. 1201 E. 12,45

D. Example:

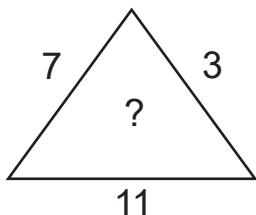


20. $14 \rightarrow \boxed{?} \rightarrow 2$ A. +
B. -
C. x
D. :
E. 13



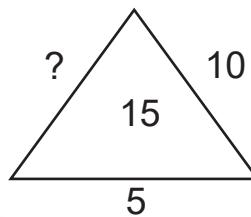
A. Example:

1.



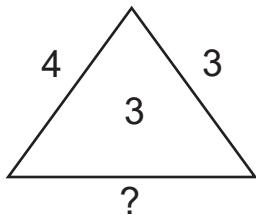
- a. 2
- b. 10
- c. 9
- d. 22

2.



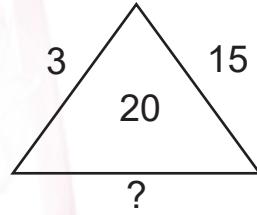
- a. 5
- b. 3
- c. 2
- d. 10

3.



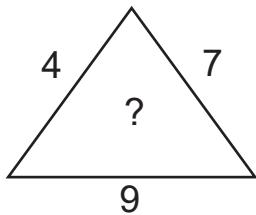
- a. 11
- b. 12
- c. 9
- d. 10

4.



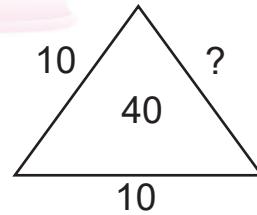
- a. 5
- b. 25
- c. 15
- d. 30

5.



- a. 17
- b. 13
- c. 19
- d. 15

6.



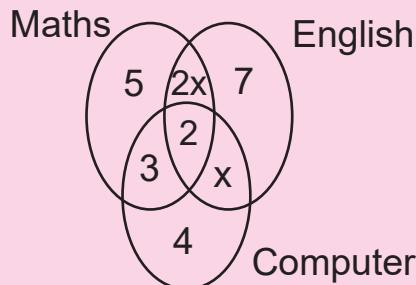
- a. 3
- b. 5
- c. 7
- d. 9





B. Example:

Study the Venn diagram below and use it to answer questions 7 - 12. The Venn diagram shows the number of pupils that passed Maths, English and Computer in a class of 30 students.



7. How many pupils passed Maths only?
a. 4 b. 5 c. 7 d. 2
8. How many pupils passed both Maths and Computer only?
a. 5 b. 7 c. 3 d. 2
9. How many pupils passed computer only?
a. 5 b. 4 c. 3 d. 7
10. x pupils passed both English and Computer only; what is x ?
a. 2 b. 3 c. 4 d. 5
11. How many pupils passed both Maths and English only?
a. 6 b. 10 c. 12 d. 14
12. How many pupils passed the three subjects?
a. 1 b. x c. 2 d. 5

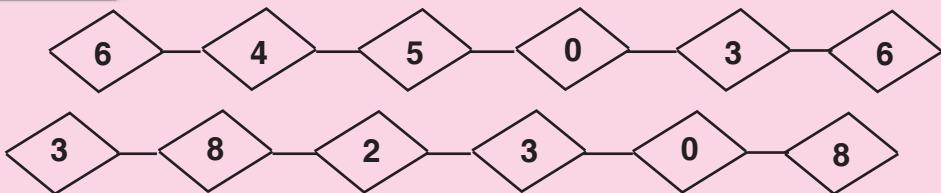


A. Example:

4	1	1	8 m	1	2	5	7 m
5	4	2	0 m	3	4	8	2 m
9	5	3	8 m	4	7	3	9 m
1	3	0	2 m	2	2	2	5 m

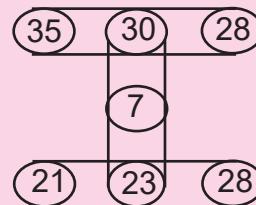
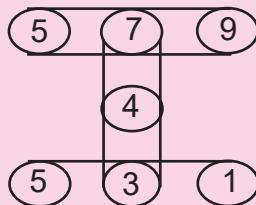
1. $\begin{array}{cccc} 1 & 4 & 7 & 1 \text{ m} \\ \boxed{} & \boxed{} & \boxed{} & \boxed{} \text{m} \\ 5 & 0 & 2 & 7 \text{ m} \\ 2 & 0 & 8 & 5 \text{ m} \end{array}$ A. 3 6 5 6 B. 1 8 4 1 C. 3 5 5 6
D. 2 7 3 9 E. 5 4 1 8
2. $\begin{array}{cccc} 1 & 6 & 2 & 4 \text{ m} \\ 7 & 0 & 1 & 2 \text{ m} \\ \boxed{} & \boxed{} & \boxed{} & \boxed{} \text{m} \\ 5 & 3 & 8 & 8 \text{ m} \end{array}$ A. 8 6 3 6 B. 4 9 3 2 C. 1 7 2 5
D. 8 4 3 2 E. 3 9 7 4
3. $\begin{array}{cccc} 1 & 5 & 3 & 0 \text{ m} \\ 6 & 0 & 1 & 8 \text{ m} \\ 7 & 5 & 4 & 8 \text{ m} \\ \boxed{} & \boxed{} & \boxed{} & \boxed{} \text{m} \end{array}$ A. 3 3 2 6 B. 9 9 3 3 C. 2 4 7 2
D. 2 4 3 8 E. 4 4 8 8
4. $\begin{array}{cccc} \boxed{} & \boxed{} & \boxed{} & \boxed{} \text{m} \\ 5 & 2 & 6 & 1 \text{ m} \\ 8 & 3 & 0 & 1 \text{ m} \\ 2 & 2 & 2 & 1 \text{ m} \end{array}$ A. 5 6 1 2 B. 3 0 4 0 C. 1 2 4 8
D. 1 7 3 9 E. 1 6 6 4
5. $\begin{array}{cccc} 1 & 4 & 1 & 5 \text{ m} \\ \boxed{} & \boxed{} & \boxed{} & \boxed{} \text{m} \\ 4 & 3 & 3 & 7 \text{ m} \\ 1 & 5 & 0 & 7 \text{ m} \end{array}$ A. 2 9 2 2 B. 3 1 6 8 C. 7 2 9 5
D. 2 5 3 1 E. 5 9 2 7



B. Example:

6. A. 4, 2 B. 0, 1 C. 1, 3 D. 2, 6 E. 4, 8
7. A. 2, 4 B. 3, 2 C. 1, 2 D. 2, 6 E. 1, 1
8. A. 2, 5 B. 0, 5 C. 6, 0 D. 7, 0 E. 5, 0
9. A. 6, 7 B. 8, 2 C. 2, 8 D. 8, 1 E. 1, 8
10. A. 2, 8 B. 8, 3 C. 3, 8 D. 8, 4 E. 4, 8



C. Example:

- 11.
- A. 1
B. 5
C. 8
D. 6
E. 9

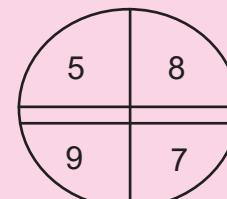
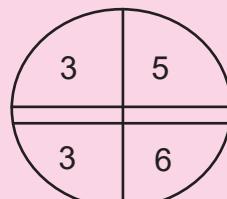
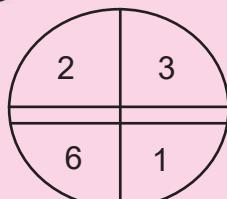
- 14.
- A. 12
B. 15
C. 24
D. 21
E. 20

- 12.
- A. 16
B. 23
C. 27
D. 18
E. 19

- 15.
- A. 15
B. 11
C. 12
D. 13
E. 14

- 13.
- A. 10
B. 8
C. 12
D. 7
E. 9



D. Example:

- 16.
- | | |
|---|---|
| 4 | 1 |
| 7 | 3 |
- A. 5 B. 6 C. 8 D. 7 E. 0
- 17.
- | | |
|---|---|
| 5 | 2 |
| 3 | 1 |
- A. 0 B. 1 C. 2 D. $\frac{1}{2}$ E. 0
- 18.
- | | |
|---|---|
| 7 | 0 |
| 9 | 6 |
- A. 1 B. 0 C. 2 D. 4 E. $\frac{1}{2}$
- 19.
- | | |
|----|----|
| 10 | 12 |
| 15 | 18 |
- A. 6 B. 5 C. 9 D. 10 E. 12
- 20.
- | | |
|---|---|
| 1 | 1 |
| 1 | 1 |
- A. 0 B. 2 C. 4 D. 5 E. 3



E. Example:



2	4	6
4	16	20
6	36	42

21.

a	25	30
3	b	12
7	49	c

a =
b =
c =

24.

11	a	132
5	25	b
10	100	c

a =
b =
c =

22.

10	a	110
1	1	b
4	c	20

a =
b =
c =

25.

2	4	6
12	a	b
3	9	c

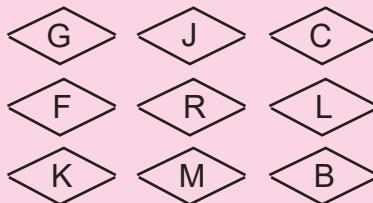
a =
b =
c =

23.

8	64	a
9	b	90
c	36	42

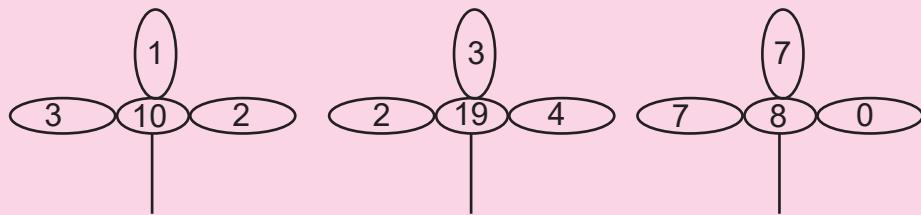
a =
b =
c =



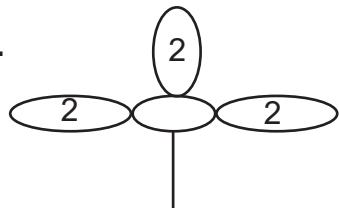
F. Example:

26.
 A. S B. O C. G D. F E. H
27.
 A. T B. H C. U D. D E. X
28.
 A. T B. O C. M D. R E. Q
29.
 A. W B. U C. V D. O E. L
30.
 A. S B. R C. A D. B E. G



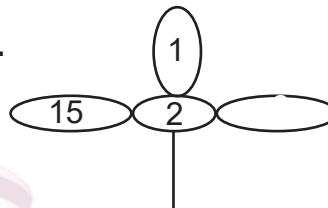
G. Example:

31.



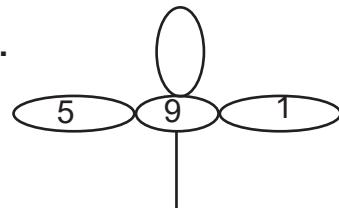
- A. 2
B. 6
C. 4
D. 8
E. 10

34.



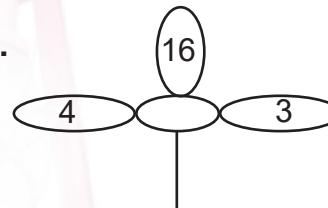
- A. 1
B. $\frac{1}{2}$
C. 0
D. 2
E. 3

32.



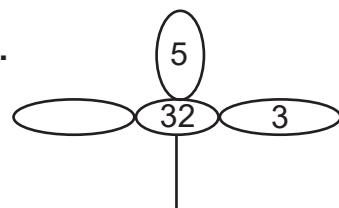
- A. 6
B. 5
C. 45
D. 4
E. 15

35.



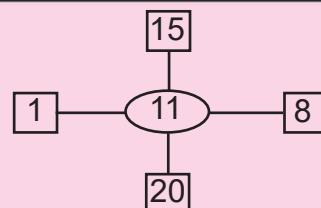
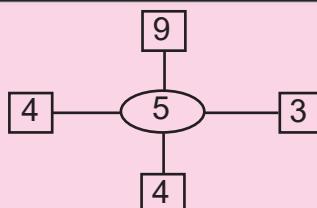
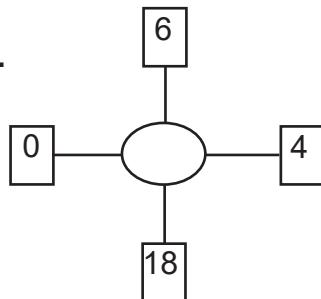
- A. 80
B. 28
C. 67
D. 7
E. 20

33.

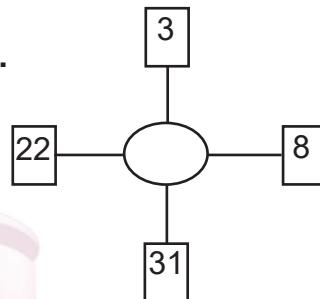


- A. 3
B. 4
C. 2
D. 40
E. 8

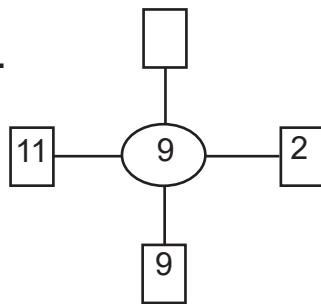


H. Example:**36.**

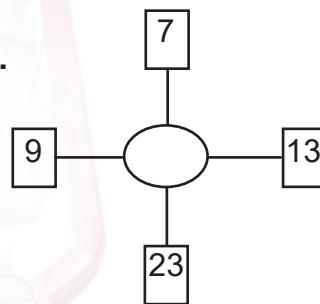
- A. 7
B. 8
C. 9
D. 10
E. 12

39.

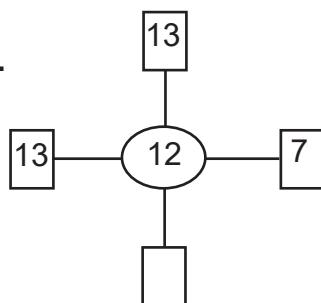
- A. 34
B. 25
C. 16
D. 30
E. 26

37.

- A. 11
B. 14
C. 12
D. 15
E. 13

40.

- A. 36
B. 16
C. 30
D. 22
E. 13

38.

- A. 9
B. 8
C. 10
D. 11
E. 12



**A. Example:**

The diagram below represents the types of creams used by some people.

4		3
5	2	6
9		7

1		6
8	4	1
4		2

1.

5		2
4		1
1		0

- A. 6
- B. 7
- C. 5
- D. 3
- E. 9

2.

		7
9	6	6
7		5

- A. 9
- B. 5
- C. 8
- D. 2
- E. 1

3.

7		3
1	5	6
8		

- A. 2
- B. 1
- C. 3
- D. 4
- E. 5

4.

7		6
0		2
4		2

- A. 0
- B. 2
- C. 3
- D. 4
- E. 1

5.

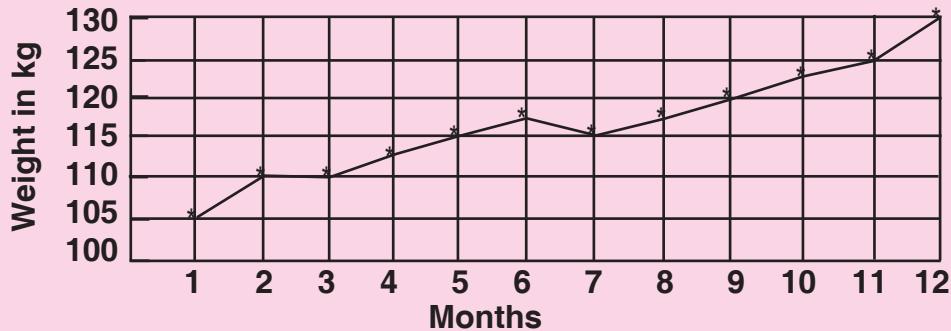
8		5
7		2
3		8

- A. 1
- B. 2
- C. 3
- D. 4
- E. 5



**B. Example:**

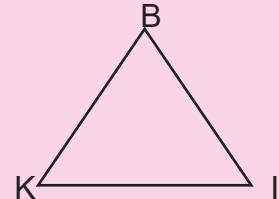
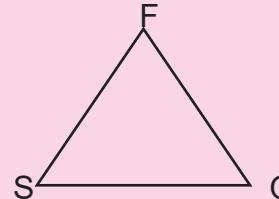
The graph below shows the weight of Mike Tyson over a 12-month period.



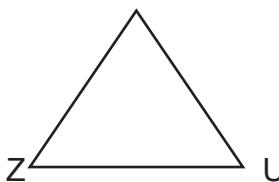
6. What was his weight in the 9th month? _____
7. In which two consecutive months did he have the same weight? _____
and _____
8. In which month did he loose weight? _____
9. What is the difference between his weight in the 5th and 9th month?

10. How much weight did he gain over the 12 months? _____



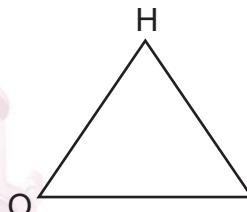
C. Example:

11.



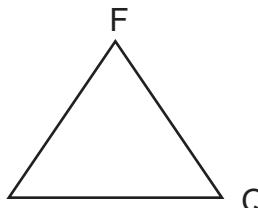
- A. Y
- B. E
- C. D
- D. L
- E. K

14.



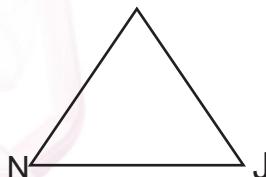
- A. I
- B. W
- C. K
- D. N
- E. G

12.



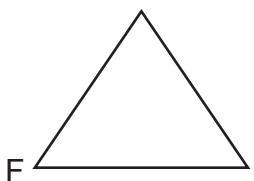
- A. M
- B. O
- C. G
- D. W
- E. X

15.



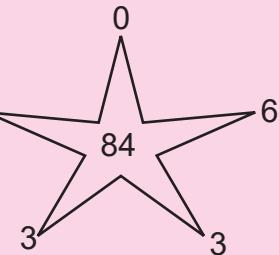
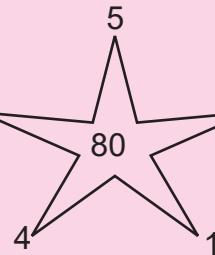
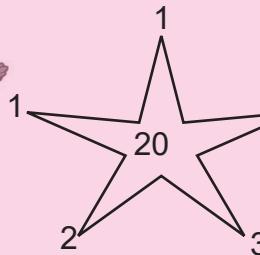
- A. D
- B. Z
- C. X
- D. Y
- E. C

13.

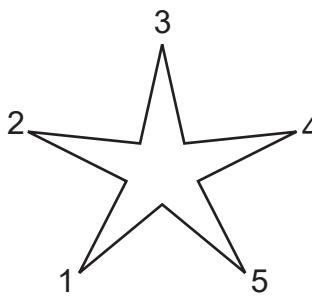


- A. U
- B. D
- C. A
- D. I
- E. V



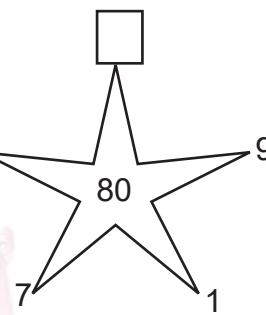
D. Example:

16.



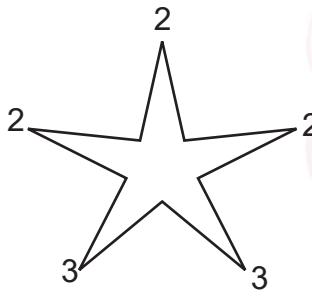
- A. 15
B. 25
C. 54
D. 48
E. 45

19.



- A. $\frac{1}{4}$
B. 2
C. $\frac{1}{2}$
D. 1
E. 0

17.



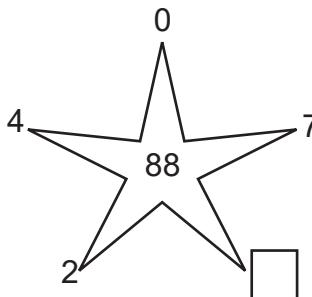
- A. 6
B. 44
C. 36
D. 72
E. 12

20.



- A. 1
B. 2
C. 4
D. 5
E. 6

18.



- A. 6
B. 8
C. 4
D. 7
E. 5



E. Example:

15

6

29

4

3

48

2

34

9

3

21

3

36

11

7

Find the relationship in the example above and use it to answer questions 1 - 4.

21.

?

5

38

7

4

- A. 8
B. 12
C. 13
D. 22
E. 27

23.

36

7

?

4

- A. 31
B. 33
C. 35
D. 55
E. 65

22.

16

9

107

?

2

- A. 11
B. 14
C. 17
D. 35
E. 49

24.

14

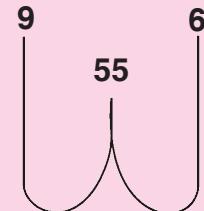
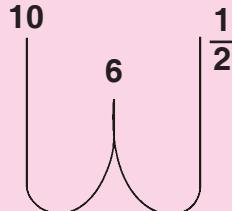
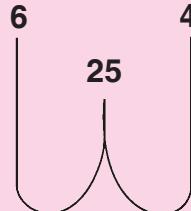
9

83

?

- A. 4
B. 7
C. 14
D. 32
E. 50



F. Example:

25. 9 8
- A. 72
B. 75
C. 73
D. 74
E. 71

28. 12 3
- A. 15
B. 5
C. 18
D. 36
E. 37

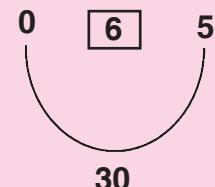
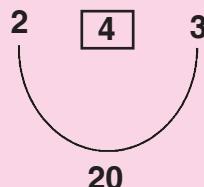
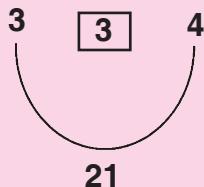
26. \square 5
- A. 10
B. 12
C. 255
D. 115
E. 20

29. \square 20
- A. 10
B. 81
C. 5
D. 4
E. 10

27. 15 \square
- A. 2
B. 0
C. 2
D. 1
E. 21



G. Example:



30. 8 **?** 5

 39
- A. 3
 B. 13
 C. 31
 D. 34
 E. 44
31. ? **4** 3

 60
- A. 7
 B. 12
 C. 15
 D. 20
 E. 63
32. 6 **2** ?

 20
- A. 18
 B. 14
 C. 10
 D. 4
 E. 8
33. 3 **5** 5

 ?
- A. 8
 B. 13
 C. 25
 D. 40
 E. 75
34. 6 **?** 4

 40
- A. 6
 B. 8
 C. 4
 D. 10
 E. 12
35. 5 **4** 9

 ?
- A. 70
 B. 56
 C. 35
 D. 60
 E. 30



H. Example:

9
18
36
72

40
80
160
320

$\frac{1}{4}$
 $\frac{1}{2}$
1
2

- 36.
- | | | | | |
|----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| <input type="radio"/> A. 6 | <input type="radio"/> B. 12 | <input type="radio"/> C. 18 | <input type="radio"/> D. 21 | <input type="radio"/> E. 24 |
| <input type="radio"/> 3 | <input type="radio"/> 6 | <input type="radio"/> 12 | <input type="radio"/> □ | |

- 37.
- | | | | | |
|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| <input type="radio"/> A. 12 | <input type="radio"/> B. 14 | <input type="radio"/> C. 22 | <input type="radio"/> D. 33 | <input type="radio"/> E. 43 |
| <input type="radio"/> 11 | <input type="radio"/> □ | <input type="radio"/> 44 | | <input type="radio"/> 88 |

- 38.
- | | | | | |
|----------------------------|------------------------------|------------------------------|------------------------------|------------------------------|
| <input type="radio"/> A. 5 | <input type="radio"/> B. 400 | <input type="radio"/> C. 100 | <input type="radio"/> D. 120 | <input type="radio"/> E. 150 |
| <input type="radio"/> 25 | <input type="radio"/> 50 | <input type="radio"/> □ | | <input type="radio"/> 200 |

- 39.
- | | | | | |
|--|--|--|--|--|
| <input type="radio"/> A. $\frac{1}{8}$ | <input type="radio"/> B. $\frac{1}{4}$ | <input type="radio"/> C. $\frac{3}{4}$ | <input type="radio"/> D. $\frac{1}{2}$ | <input type="radio"/> E. $\frac{1}{8}$ |
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STEPS TO QUANTITATIVE REASONING

For Primary Schools

6

Ore Olunloyo



Lantern books

LITERAMED PUBLICATIONS (NIG) LTD

First Published, 1990

Revised 1999, 2002, 2005, 2008, 2009, 2011, 2014, 2016, 2018, 2022

Replanned 2006, 2014, 2025

Reprinted 2003, 2004, 2012, 2025

by

Lantern books



a division of

Literamed Publications Nigeria Limited

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ISBN 978-978-100-947-1

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Designed and Printed by

Literamed Publications Nigeria Limited

Printing Press Division,

Ikeja, Lagos.

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Preface



Steps to Quantitative Reasoning is a collection of carefully graded books designed to put pupils through the skills needed for quantitative reasoning.

It is hoped that at the end of the series, the pupils who use it would have a basic understanding in tackling any past question papers on Quantitative Aptitude, and that it would guide the child step-by-step to a brilliant performance in the common entrance examination, Universal Basic Education examination and similar intelligence tests. Since solutions to problems in the books demand careful attention and reasoning, the series impact, gradually, these skills to children.

It is however very important for the teacher to structure the learning process even though the exercises are self-explanatory.

Remember, we learn by doing, but we learn best of all by doing correctly.

In each of the books, the exercises and tests become progressively difficult. The books can be used at home and in school. There is an answer book for the series.

In this revised edition, more exercises have been included to expand further the pupils' activities and to prepare them for Universal Basic Education examinations.

Steps to Quantitative Reasoning has a companion series called Steps to Verbal Reasoning.

Ore Olunloyo

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