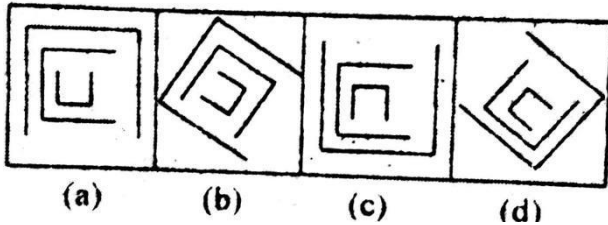# Reasoning VISUAL REASONING Questions, Answers & Explanation
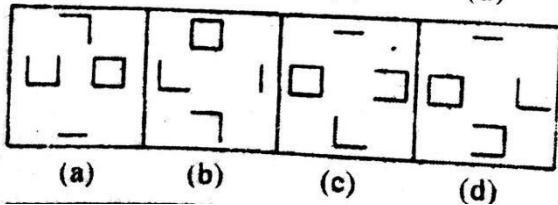
EXERCISE

DIRECTIONS (Qs. 1-3): Choose the figure which is different from the others.
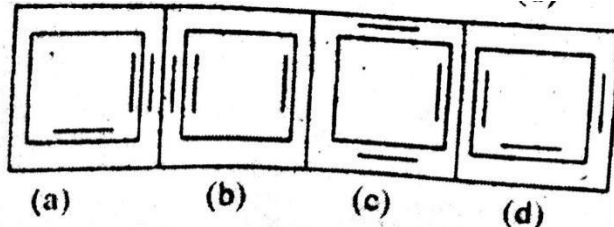
1.

(a)　　　(b)　　　(c)　　　(d)

2.

(a)　　　(b)　　　(c)　　　(d)

3.

(a)　　　(b)　　　(c)　　　(d)
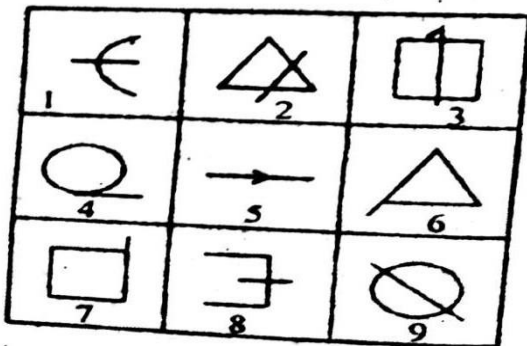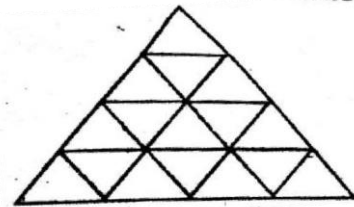
4. Group the following figures into three classes on the basic of identical properties.

(a) 1, 3, 9; 2, 5, 8; 4, 6, 7
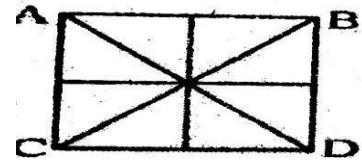(b) 4, 8, 9; 1, 2, 5; 3, 6, 7
(c) 2, 5, 9; 1, 3, 8; 2, 6, 7

(d) 1, 8, 9; 4, 6, 7; 2, 3, 5
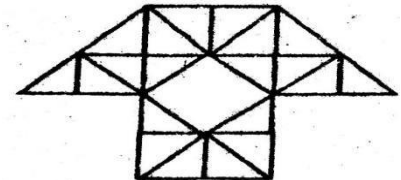
5. How many triangles are there in the following figure?

(a) 29　　　　　　　(b) 27
(c) 23　　　　　　　(d) 30

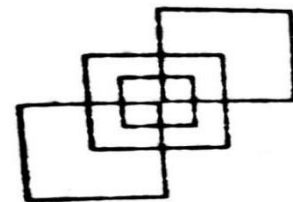6. How many triangles are there in the given figure?

(a) 16　　　　　　　(b) 14
(c) 8　　　　　　　(d) 12

7. How many triangles are there in the given figure?
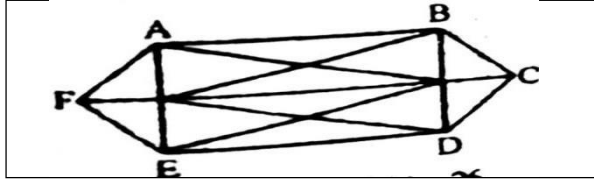

(a) 29　　　　　　　(b) 38
(c) 40　　　　　　　(d) 35

8. How many squares are there in the given figure?
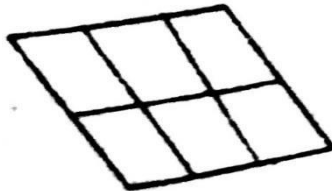

(a) 12　　　　　　　(b) 13
(c) 10　　　　　　　(d) 11
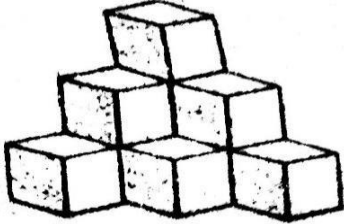
9. How many triangles are there in the given figure ABCDEF?

1

(a) 24   (b) 26
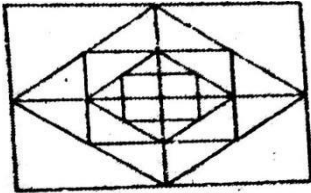(c) 28   (d) 30

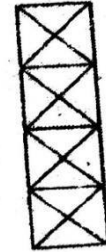10.   How many Parallelograms are there in the given figure?

(a) 14   (b) 15
(c) 16   (d) 18

11.   How many cubes are there in the given figure?

(a) 6   (b) 10
(c) 12   (d) 8

12.   What is the number of squares in figure?

(a) 12   (b) 13
(c) 15   (d) 17

13.   What is the number of triangles in figure?

(a) 16   (b) 28
(c) 32   (d) 38

14.

How many triangles are there?
(a) 20   (b) 21
(c) 26   (d) 28

15.   How many Rectangles are there in the given figure?

(a) 13   (b) 14
(c) 15   (d) 17

16.   How many Semicircles are there in the given figure?

(a) 16   (b) 14
(c) 12   (d) 10

17.   Count the number of squares in the given figure.

(a) 22   (b) 20
(c) 18   (d) 14

18.   How many circles are there in the adjoining figure.
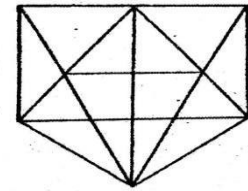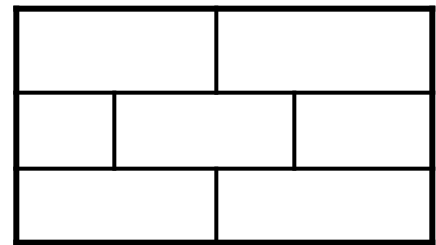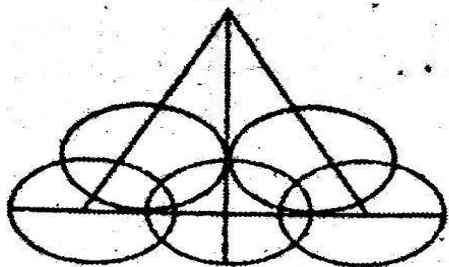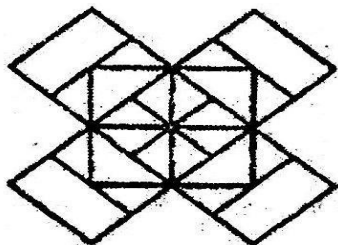

(a) 11   (b) 12
(c) 13   (d) 14

19.   What is the number of triangles in figure?
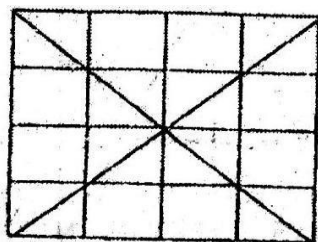
(a) 32   (b) 36
(c) 40   (d) 56

20.   What is the number of triangles in figure?
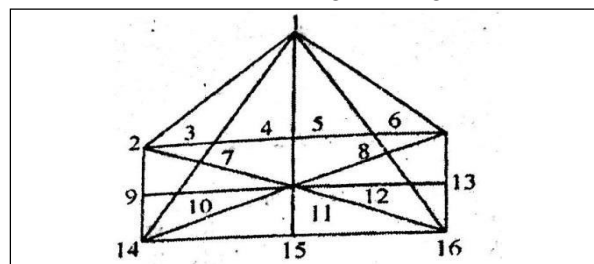
(a) 32   (b) 39
(c) 46   (d) 60

21.   How many triangles are there m the given figure?

(a) 10   (b) 12
(c) 14   (d) 11

22.   How many triangles are there in the give figure?
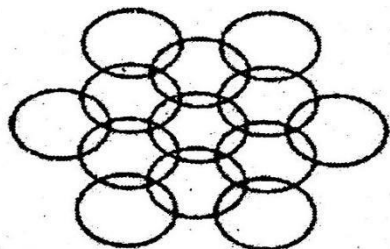

(a) 48   (b) 60
(c) 56   (d) 52

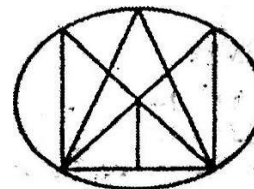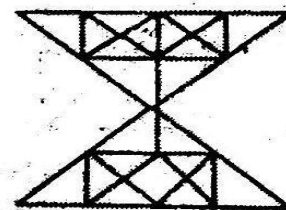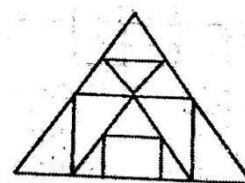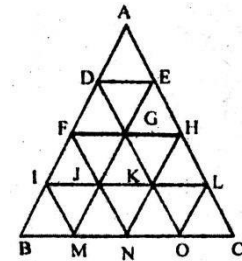23.   Find out the number of triangles in the given figure.

(a) 13   (b) 15
(c) 16   (d) 17

3

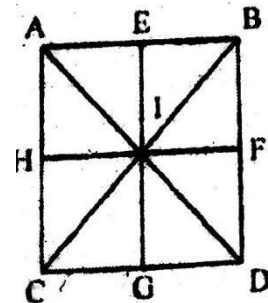| 1	(a)	5	(b)	9	(c)	13	(d)	17	(c)	21	(c)
2	(b)	6	(a)	10	(c)	14	(d)	18	(c)	22	(c)
3	(c)	7	(c)	11	(b)	15	(a)	19	(d)	22	(c)
4	(d)	8	(c)	12	(d)	16	(c)	20	(d)		

HINTS & EXPLANATIONS

1. (a) All other figures can be rotated into each other. (In each figure except fig. (a) the middle element is obtained by rotating the outer element through 90° CW and the inner element is obtained by rotating the middle element through 90°CW).

2. (b)Each one of the figure except fig. (b), contains- one complete square, one cup-shaped element having side, one 'L'-shaped element having two sides and one straight line.

3. (c)In all other figures, the square has two line segments insides and one inside and one line segment outside.

4. (d)1, 8, 9 are figure bisected by a straight line.
   4, 6, 7 are figures having an extended arm.
   2, 3, 5 are figures intersected by a line.
   Thus the given figure containing nine figures may be divided into three pairs: (1, 8, 9), (4, 6, 7) and (2, 3, 5). Hence the answer is (d).

5. (b)

The triangles are:
ΔABC; ΔADE; ΔAFH; ΔAIL;
ΔDFG; ΔDIK; ΔDBO; ΔGDE;
ΔEGH; ΔEJL; ΔEMC; ΔFIJ;
ΔFBN; ΔJFG; ΔGJK; ΔKGH;
ΔHKL; ΔHNC; ΔNFH; ΔGMO;
ΔIBM; ΔMIJ; ΔJMN; ΔNJK;
ΔKNO, ΔOKL; ΔLOC;

6. (a)

The triangles are;
ΔAIH; ΔAIE; ΔEIB; ΔBFI;
ΔIHC; ΔIGC; ΔIGD; ΔDFI;

4

ΔIAB; ΔIBD; ΔICD; ΔIAC;
ΔBAC; ΔACD; ΔBDC; ΔBDA;

7.   (c)

The simplest triangles are:
ΔPNO; ΔPNM; ΔMPQ;
ΔMQR; ΔAQP; ΔAQR;
ΔBRA; ΔBRC; ΔSRC;
ΔSCD; ΔSGR; ΔSGD;
ΔDFG; ΔDFE; ΔTLM;
ΔTJK; ΔTLK; ΔTIH;

The triangles composed of two components are:
ΔPON; ΔPMA; ΔAPR;
ΔRAM; ΔRAC; ΔRGC;
ΔDGC; ΔDGE; ΔMPR;
ΔGRD; ΔDGE; ΔTMK;
ΔTKI; ΔTIG

The triangles Composed of four components are:
ΔAMO; ΔAMC; ΔCAG;
ΔCGE; ΔMKI; ΔGIK;
Other triangles are: ΔSPI; ΔDQK
Total number of triangles 18 + 14 + 6 + 2=40

8.   (a)
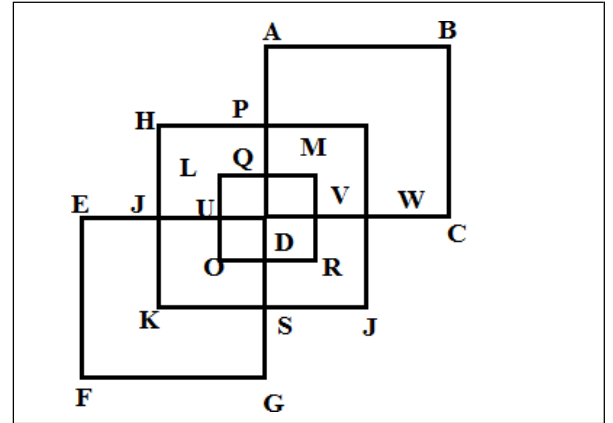
Squares are:
ABCP, DEFG, HIJK, LMNO,
HPDT, TDSK, PIWD, DWJS,
LQDU, UDRO, QMVD, DVNR.

9.   (c)

The triangles are:
ΔFAE; ΔFAI; ΔFIE; ΔCBD;
ΔCBJ; ΔCJD; ΔAIJ; ΔBJI;
ΔBJA; ΔAIB; ΔIED; ΔJDE;
ΔJDI; ΔIEJ; ΔGAB; ΔGAI;
ΔGJI; ΔGJB; ΔHJI; ΔHDE;
ΔHEI; ΔHJD; ΔAJF; ΔEFJ;
ΔBCI; ΔCDI; ΔIBD; ΔJEA;

10.   (c) We can label the figure as shown.

The simplest parallelogram are ABFE, BCGF, CDHG EFJI, FGKJ and GHLK. These are 6 in number.

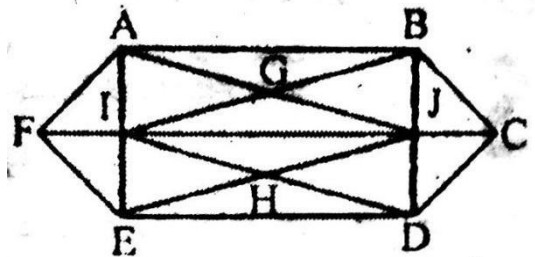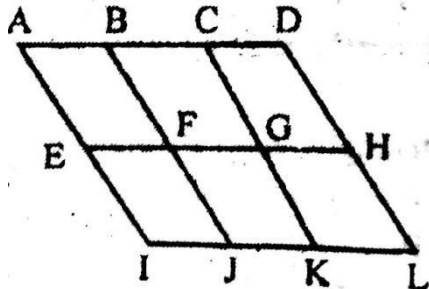The parallelograms composed of two components each, are ACGE, BDHF, EGKI, FHLJ, ABJI, BCKJ and CDLK. Thus, there are 7 such parallelograms. The parallelogram composed of four components each are ACKI and BDLJ i.e. 2 in number. There is only one parallelogram composed of six components, namely, ADLI. Thus, there are 6 + 7 + 2 + 1 = 16 parallelograms in the figure.

11.   (b) There are 10 cubes.

12.   (d) We have three squares with vertical and horizontal sides. Each such square has $1^2 + 2^2 = 5$ squares in it.

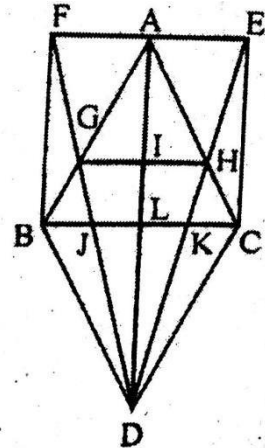Thus there are 15 such squares.

In addition, we have two obliquely placed squares.

Hence total no. of squares = 17

13.   (d) Each small square is bisected by its diagonals to give 4 triangles of half the size of the square and 4 triangles of l/4th the size of the square.

Thus there are $8 \times 4 = 32$ triangles in the four squares. Then there are six triangles as shown in the adjoining figure. Total no. of triangles = 32 + 6 = 38
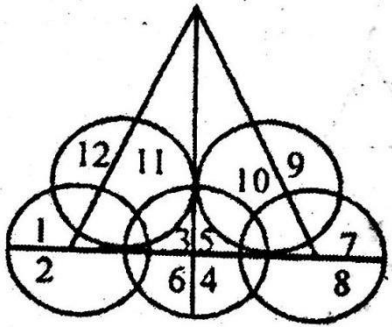
14.   (d)

Δ FDE, ΔACD, ΔABD, ΔFBD, ΔABC, ΔBCD, ΔBKD, ΔBLD, ΔBJD, ΔJCD, ΔJKD, ΔLDJ, Δ LCD, ΔLKD, ΔHDC, ΔKDC, ΔEDC, ΔHKC, ΔEKC, ΔAEC, ΔEHC, ΔAEH, ΔAGH, ΔAIH, ΔAGI, ΔAFB, ΔAGF, ΔFBG.
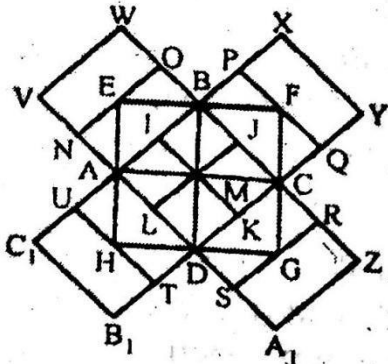
15.   (a) The rectangles are−
ABKJ, BCDK, JLPI, LMNP,
MDEN, IOGH, OEFG, ACDJ,
JMNI, LDEP, JDEI, IERH, ACFH
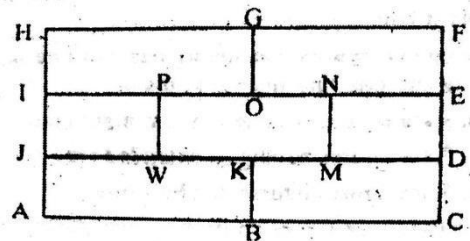
16.   (c) According to the figure there are 12 semicircles.

6

17.   (c) The figure may be labelled as shown.

The squares composed of two components each are BJM1, CK.MJ, DLMK and AIML i.e. 4 in number.

The squares composed of three components each are EBMA, BFCM, MCGD and AMDH i.e. 4 in number.

The squares composed of four components each are VWBA, XYCB, ZAIDC and BICIAD i .e. 4 in number.

The squares composed of seven components each are NOJL, PQKI, RSLJ and TUIK i.e. 4 in number. There is only one square i.e. ABCD composed of eight components.

There is only one square i.e. EFGH composed of twelve components.
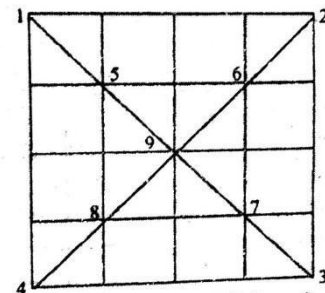
Total number of squares in the figure
$= 4 + 4 + 4 + 4 + 1 + 1 = 18$.

18.   (c) The figure may be labelled as shown.
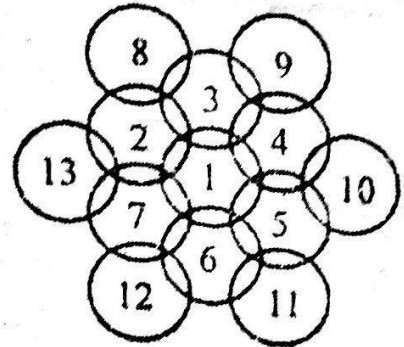
There are 13 circles in the given figure. This is clear from the adjoining figure in which the centres of all the circles in the given figure have been numbered from 1 to 13.

19.   (d) With vertex no. 1 we have four triangles on one side of the diagonal and four triangles on the other side.

Thus front four vertices. We have in all $4 \times 8 = 32$ triangles.
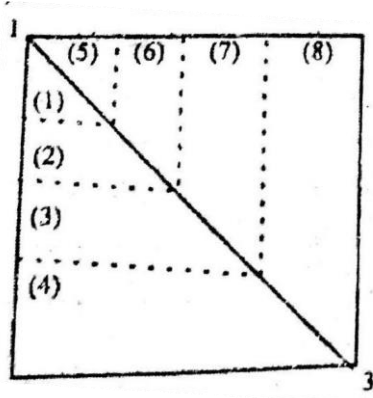
Next consider square (5 - 6 - 7 - 8).

There are four triangles from each vertex.

Thus we have another $4 \times 4 = 16$ triangles.

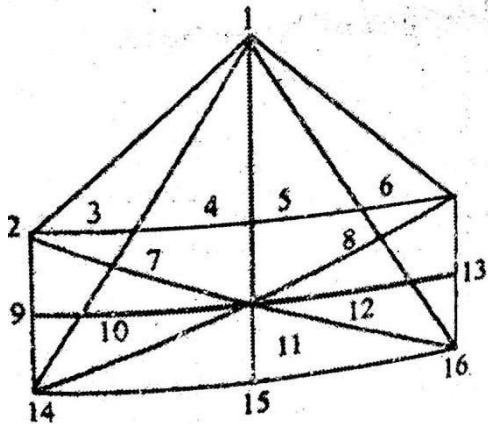Lastly, we have oblique triangles with vertex 9 such as $(9-6-7)$, $(9 - 2 - 3)$ and so on.

There are 8 such triangles.

Hence, total no. of triangles $= 32 + 16 + 8 = 56$

20.   (d) Within the triangle with vertices 1, 2, 6, there are $4 + 3 + 2 + 1 = 10$ triangles. In the triangle with vertices 1, 2, 14 there are 6 triangles.

In the triangle with vertices 1, 14, 15 there are 8 triangles.

This pattern is repeated for triangle 1, 6, 16 and for triangle 1, 15, 16.

In the triangle with vertices 1, 6, 14 there are 3 triangle and the pattern is repeated for the triangle with vertices 1, 2, 16.
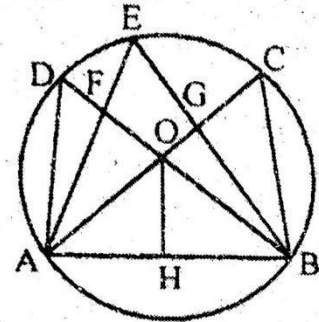
In the parallelogram, there are 4 triangles each half the size, 4 triangles of quarter size and 6 triangles each made up of two small triangles.

Finally, there two triangles with vertices 1, 10, 12 and 1, 14, 16 respectively
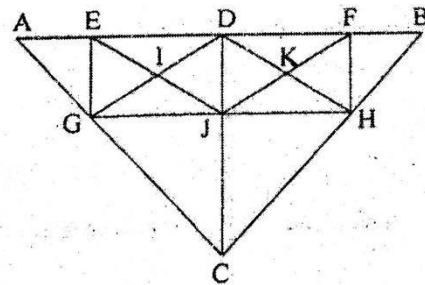
Hence total no. of triangles.

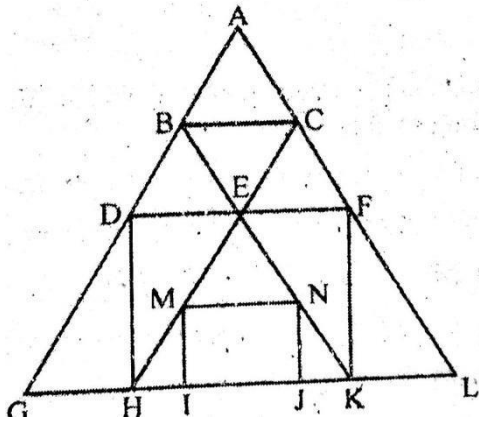$= 10 + 2(6 + 8) + 2 \times 3 + (4 + 4 + 6) + 2 = 60$

21.   (c)

There 14 triangles in the given figure. These are AHO, ACB, BHO, BAD, ABE, ABD, BAF, ABG, AOF, AFD, BOG, BGC, ADO and BOC.

22.   (c)

$\triangle ABC$, $\triangle ADC$, $\triangle DBC$, $\triangle AEG$, $\triangle BFH$
$\triangle EIG$, $\triangle EID$, $\triangle IGJ$, $\triangle IDJ$
$\triangle DKJ$, $\triangle DFK$, $\triangle KJH$, $\triangle KFH$ $\triangle EDG$ $\triangle DJG$ $\triangle EGJ$ $\triangle DJG$ $\triangle DFJ$, $\triangle FHJ$, $\triangle DHJ$, $\triangle DFH$ $\triangle ADG$ $\triangle DGH$, $\triangle DBH$, $\triangle JEF$ $\triangle GJC$, $\triangle HJC$, $\triangle GHC = 28$ Triangles $28 \times 2 = 56$ Triangles.

23.   (c)

8

ΔABC, ΔBDE, ΔBCE, ΔCEF, ΔADF,
ΔDGH, ΔDEH, ΔMHI, ΔEMN, ΔNKJ,
ΔFKE, ΔEHK, ΔAGL, ΔFKL, ΔCHL, ΔBGK
Number of Triangles = 16