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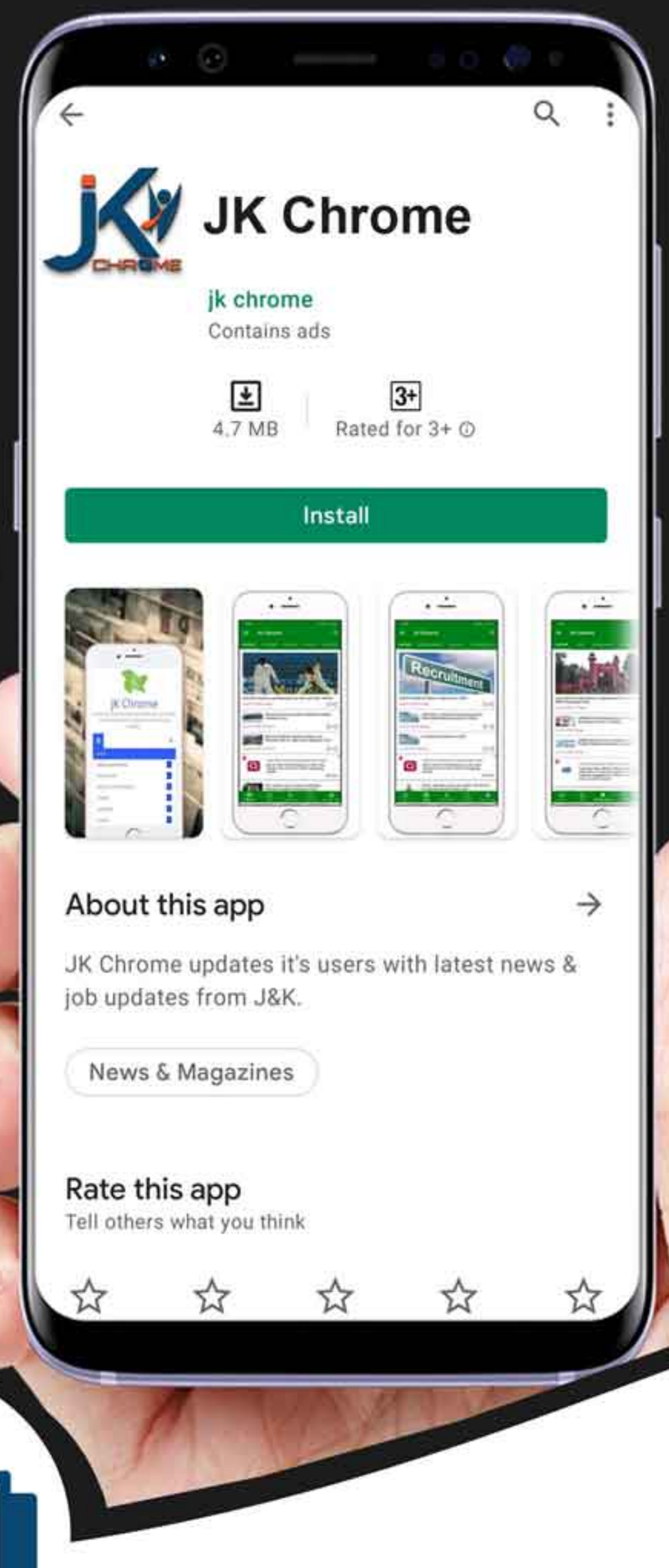

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CHAPTER

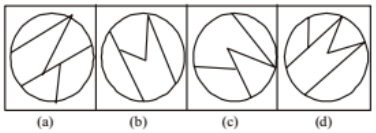
15

Counting of Figures/Figure Formation & Analysis, Grouping of Figures

DIRECTIONS (Q. 1) : *Among the four answer figures, which figure can be formed from the cut-pieces given below in the question figure*?

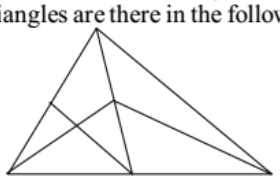
1. **Question Figure:**

Answer Figures:



(SSC CGL 1st Sit. 2010)

2. How many triangles are there in the following figure ?



(SSC CGL 1st Sit. 2010)

(a) 11 (b) 13 (c) 9 (d) 15

3. Among the four answer figures, which figure can be formed from the cut pieces given below in the question figure ?

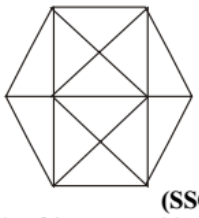
Questions Figure : **(SSC CGL 2nd Sit. 2010)**

Answer Figures :

(a)  (b) 

(c)  (d) 

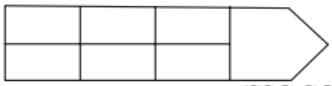
4. How many triangles are there in the following figure ?



(SSC CGL 2nd Sit. 2010)

(a) 20 (b) 24 (c) 28 (d) 32

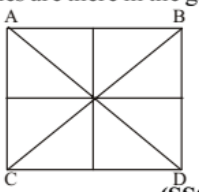
5. How many rectangles are there in the given diagram?



(SSC CGL 1st Sit. 2011)

(a) 4 (b) 7 (c) 9 (d) 18

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

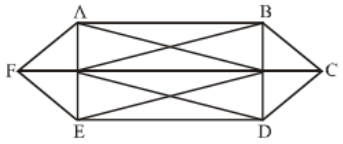


(SSC CGL 2nd Sit. 2011)

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

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

(SSC Sub. Ins. 2012)

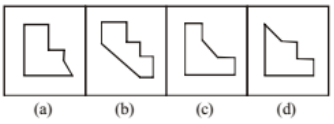


(a) 24 (b) 26 (c) 28 (d) 30

8. In the question, one part of the problem figure is subtracted. Select the option that shows the correct shape after subtraction. **(SSC Sub. Ins. 2012)**

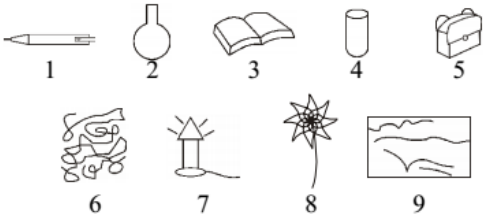
Question Figure

Answer Figures



9. A series of figures are given which can be grouped as related to students, artists and scientists. Select the groups into which the figures can be classified.

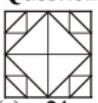
(SSC Sub. Ins. 2012)



1. Pen 2. Flask
3. Book 4. Test Tube
5. School bag 6. Design
7. Flame 8. Flower
9. Painting

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

10. How many triangles are there in this figure?
Question figure :



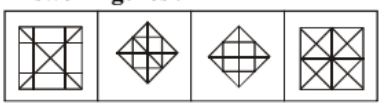
(SSC CHSL 2012)

(a) 24 (b) 26 (c) 28 (d) 20

DIRECTIONS (Qs. 11-18) : *Among the four answer figures, which figure can be formed from the cut-pieces given below in the question figure*?

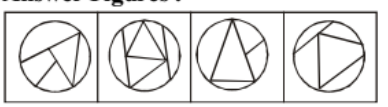
11. **Question Figure :** **(SSC Multitasking 2013)**

Answer Figures :



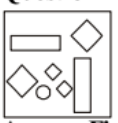
12. **Question Figure :**

Answer Figures :



(a) (b) (c) (d)

13. Which answer figure includes all the components given in the question figure ? **(SSC CGL 1st Sit. 2013)**
Question Figure :

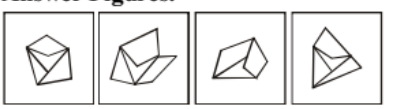


Answer Figures :

(a) (b) (c) (d)

14. Identify the response figure from which the question figure's pieces have been cut. **(SSC CGL 2nd Sit. 2013)**
Question figure

Answer Figures.



(a) (b) (c) (d)

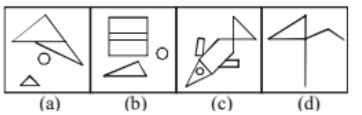
15. There is a ball and a rectangular jar. Four positions are shown below to keep them balanced. Which of the following will **not** get balanced easily? **(SSC CGL 1st Sit. 2013)**
Question figures:

Answer figures:

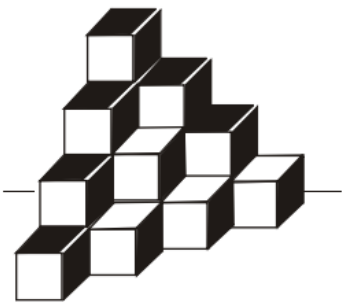
(a) (b) (c) (d)

16. Which of the answer figures include the separate components found in the question figure?
Question figure: **(SSC CGL 1st Sit. 2013)**

Answer figure:



(a) (b) (c) (d)



(SSC CGL 1st Sit. 2013)

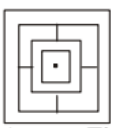
(a) 16 (b) 18 (c) 20 (d) 10

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

(SSC CGL 1st Sit. 2013)

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

19. Find out which of the answer figures will exactly make up the question figure? **(SSC CGL 1st Sit. 2013)**
Question Figure:



Answer Figures:

(a) (b) (c) (d)

20. Find out which of the following answer figures will exactly make up the question figure ? **(SSC CGL 1st Sit. 2013)**

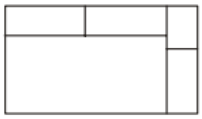
Question Figure :

Answer Figures.

(a) (b) (c) (d)

21. How many rectangles are there in the question figure ?

Question figure :



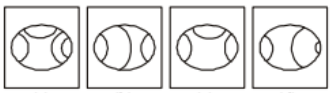
(SSC CHSL 2014)

(a) 6 (b) 7
(c) 8 (d) 9

22. Among the for answer figures, which figure can be formed from the cut - pieces given below in the question figure ?

Question figure :

Answer figures : **(SSC CHSL 2014)**

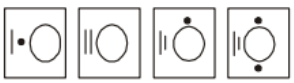


(a) (b) (c) (d)

23. Find out which answer figure will exactly make up the question figure. **(SSC CGL 1st Sit. 2014)**

Question figure :

Answer figures :



(a) (b) (c) (d)

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

(SSC CGL 1st Sit.2014)

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

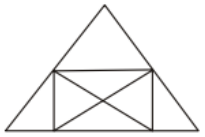
25. Identify the answer figure from which the pieces given in the question figure have been cut.

Question Figure

Answer Figure **(SSC CHSL 2015)**

(a) (b) (c) (d)

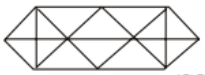
26. Find the number of triangles in the following figure :



(SSC CHSL 2015)

(a) 8 (b) 14 (c) 10 (d) 12

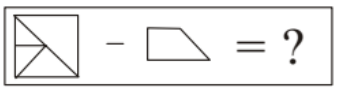
27. How many triangles are there in the figure ?



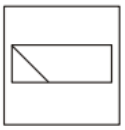
(SSC CGL 1st Sit. 2015)

(a) 24 (b) 14 (c) 28 (d) 20

28. In the question one part of the problem figure is subtracted. Select the option that shows the correct shape by the subtraction. **(SSC CGL 1st Sit. 2015)**



(a)

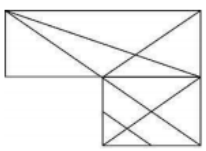


(b)

(c)

(d)

29. How many triangles can be found out from the following figure:



(SSC CGL 1st Sit. 2016)

(a) 17 (b) 21 (c) 24 (d) 25

30. How many triangles are there in the question figure?

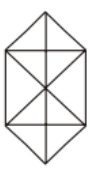
(SSC CGL 1st Sit. 2016)

(a) 18 (b) 24 (c) 28 (d) 30

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

(SSC CGL 2017)

(a) 20
(b) 22
(c) 28
(d) 32



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

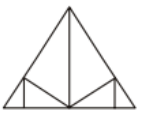
(SSC CGL 2017)

(a) 32 (b) 34 (c) 37 (d) 40

33. How many triangles are there in the given figure?
(SSC CGL 2017)

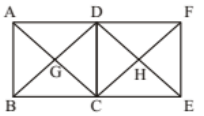
(a) 14 (b) 15 (c) 17 (d) 18

34. How many triangles are there in the figure?
(SSC CGL 2017)



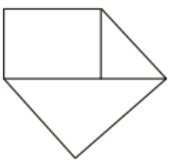
(a) 10 (b) 11 (c) 12 (d) 13

35. How many triangles are there in the given figure?
(SSC MTS 2017)



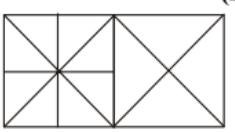
(a) 16 (b) 18 (c) 8 (d) 12

36. How many quadrilaterals are there in the given figure?
(SSC Sub. Ins. 2017)



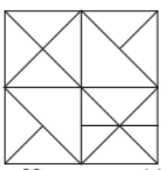
(a) 2 (b) 3 (c) 4 (d) 5

37. How many triangles are there in the given figure ?
(SSC Sub. Ins. 2017)



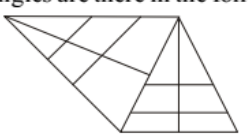
(a) 24 (b) 26 (c) 28 (d) 30

38. How many triangles are there in the following figure?
(SSC CGL 2018)



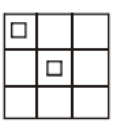
(a) 34 (b) 32 (c) 36 (d) 24

39. How many triangles are there in the following figure?



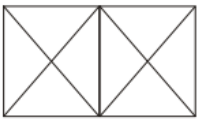
(a) 20 (b) 18 (c) 16 (d) 22

40. How many squares are present in the following figure?
(SSC CHSL 2018)



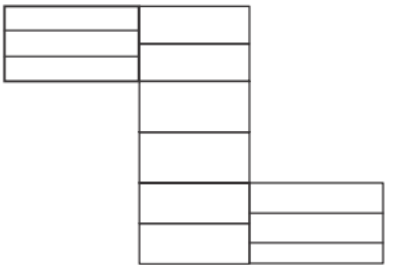
(a) 12 (b) 14 (c) 18 (d) 16

41. How many triangles are there in the following figure?
(SSC Sub. Ins. 2018)



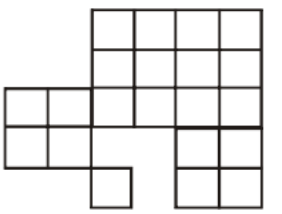
(a) 10 (b) 18 (c) 16 (d) 14

42. How many rectangles are there in the given figure?
(SSC CGL 2019-20)



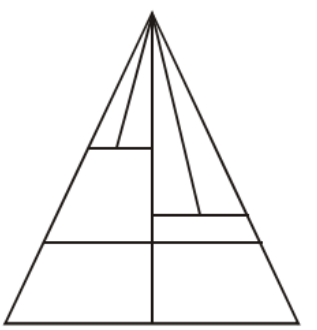
(a) 34 (b) 30 (c) 32 (d) 33

43. How many squares are there in the given figure?
(SSC CHSL 2019-20)



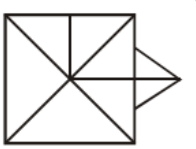
(a) 29 (b) 33 (c) 32 (d) 34

44. How many triangles are there in the given figure?
(SSC CGL 2020-21)



(a) 12 (b) 8 (c) 11 (d) 15

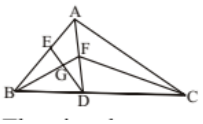
45. How many triangles are there in the given figure?
(SSC CHSL 2020-21)



(a) 16 (b) 15 (c) 17 (d) 14

Hints & Solutions

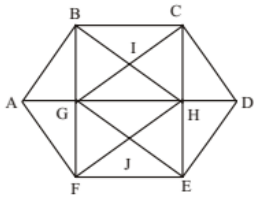
1. (c) 

2. (b) 

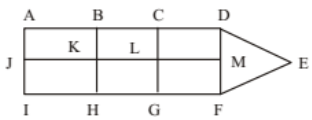
The triangles are :
ΔABC ; ΔABD ; ΔADC ; ΔAFC ;
ΔFDC ; ΔAFB ; ΔFDB ; ΔFBC;
ΔGBD ; ΔADE ; ΔGBE ; ΔFDG ;
ΔDBE ;

3. (a) 

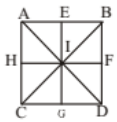
4. (c) The figure may be labelled as shown.



The simplest triangles are ABG, BIG, BIC, CIH, GIH, CDH, HED, GHJ, HJE, FEJ, GFJ and AGF i.e. 12 in number.
The triangles composed of two components each are ABF, CDE, GBC, BCH, GHC, BHG, GHF, GHE, HEF and GEF i.e. 10 in number.
The triangles composed of three components each are ABH, AFH, CDG and GDE i.e. 4 in number.
The triangles composed of four components each are BHF and CGE i.e. 2 in number.
Total number of triangles in the figure = 12 + 10 + 4 + 2 = 28.
Thus, there are 28 triangles.

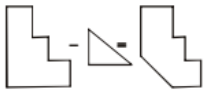
5. (d) 

The rectangles are :
ABKJ; JKHI; BCLK;
KLGH; CDML; LMFG;
ACGI; ACLJ; JLGI;
BDFH; BDMK; KMFH;
ADFI; ADMJ; JMFI
ABHI, BCGH and CDFG are squares. We know that every square is a rectanlge. But its reverse is not always true.
Note : *By option only its easy to analyze.*

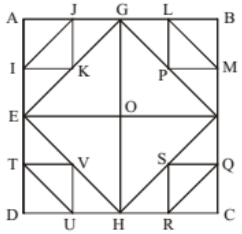
6. (a) 

The triangles are :
Δ AIH; ΔAIE; ΔEIB; ΔBFI;
ΔIHC; ΔIGC; ΔIGD; ΔDFI;
ΔIAB; ΔIBD; ΔICD; ΔIAC;
ΔBAC; ΔACD; ΔBDC; BDA
Total triangles = 16

7. (c) There are 28 triangles are formed in given figure.

8. (b) 

9. (a)

10. (c) 

There are 28 triangles are in the given figure —
EOH, EDH, OFH, HFC, EFD, OGF, GBF, GFH, AGE, EOG, EGF, GEH, AJI, IKE, KGJ, IJK, LBM, PMF, GPL, LMP, RQC, SRH, SFQ, SQR, DTU, EVT, TVU and VUH.

11. (c)

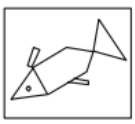
12. (a)

13. (a) 

14. (d) All the components of question figure are present in the Answer Figure (d).

15. (c) It is difficult to balance the ball and the jar in the position as shown in Answer figure (c)

16. (c) All the components of Question Figure are present in Answer Figure (c)



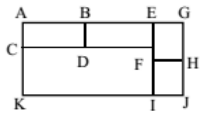
17. (c) 10 cubes are visible and 10 cubes are hidden. Clearly, there is one column having four cubes.
There are two columns each having three cubes.
There are three columns, each having two cubes.
There are four columns, each having only one cube.
Thus, total number of cubes
= 4 + 6 + 6 + 4 = 20 cubes

18. (c) 

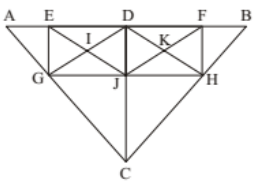
There 14 triangles in the given figure. These are AHO, ACB, BHO, BAD, ABE, ABD, BAF, ABG, AOF, AFD, BOG, BGC, ADO and BOC.

19. (a) All the components of the question figure are present in the Answer Figure (a).

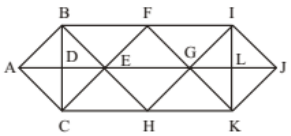
20. (b) All the components of the Question Figure are present in the answer figure (b).

21. (d) 

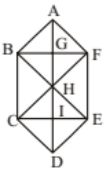
□ABCD, □BEDF, □EGFH, □FHIJ,
□AECF, □EGJI, □CFIK, □AGJK, □AEIK

22. (d)
23. (c)
24. (c) 

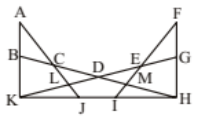
ΔABC, ΔADC, ΔDBC, ΔAEG, ΔBFH
ΔEIG, ΔEID, ΔIGJ, ΔIDJ,
ΔDKJ, ΔDFK, ΔKJH, ΔKFH
ΔEDG, ΔDJG, ΔEGJ, ΔDJG
ΔDFJ, ΔFHJ, ΔDHJ, ΔDFH
ΔADG, ΔDGH, ΔDBH, ΔJEF
ΔGJC, ΔHJC, ΔGHC = 28 Triangles
28 × 2 = 56 Triangles.

25. (d)
26. (b)
27. (c) 

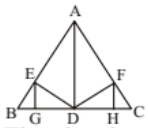
ΔABD, ΔADC, ΔBDE, ΔDEC,
ΔABC, ΔEBC, ΔACE, ΔABE,
ΔBEF, ΔFIG, ΔCEH, ΔHGK,
ΔFGE, ΔEGH, ΔGIL, ΔILJ,
ΔGLK, ΔLJK, ΔGIJ, ΔGKJ,
ΔGIK, ΔIJK, ΔBCH, ΔIHK,
ΔBFC, ΔFIK, ΔFCK, ΔHBI
Total Triangles = 28

28. (c) 29. (d) 30. (c)
31. (b) 

The Triangles are :
ΔABG, ΔAGF, ΔABF, ΔABH, ΔAFH, ΔBGH, ΔBFH, ΔBFE, ΔBFC, ΔBHC, ΔBEC, ΔCHI, ΔCHE, ΔCFE, ΔCID, ΔCED, ΔDIE, ΔDHE, ΔFHE, ΔEIH, ΔFGH and DDHC = 22 triangles.

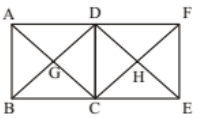
32. (c) Total number of triangles = 37.
33. (c) 

The Triangles are :
ABC, AKL, AKJ, BDK, BHK, KLM, KIM, KHG, FGE, FHM, FHI, CDL, DEM, MIH, GDH, CHJ and KEI.
So, total triangles are 17.

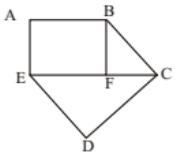
34. (b) 

The triangles are :
ΔABC, ΔABD, ΔADC, ΔAED, ΔAFD, ΔBEG, ΔBED, ΔGED, ΔDFC, ΔFHC and ΔDFH.
∴ Total number of triangles = 11.

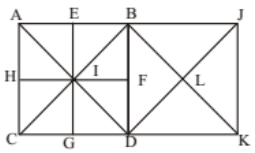
35. (b) According to figure,



The triangles are :
ΔAGD ; ΔAGB; ΔADB; ΔACF; ΔABC; ΔADC
ΔBGC; ΔBDC; ΔBDE; ΔDGC; ΔDHF; ΔDHC
ΔDCF; ΔDFC; ΔDFE; ΔCHE; ΔCFE; ΔFHE
Thus, there are 18 triangles.

36. (a) 

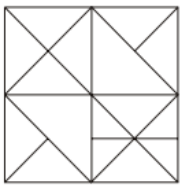
The quadrilaterals are :
ABFE and AECB
Thus, there are 2 quadrilaterals.

37. (b) 

The triangles are :

ΔAIH ; ΔAIE; ΔEIB; ΔBFI;
ΔIHC; ΔIGC; ΔIGD; ΔDFI;
ΔIAB; ΔIBD; ΔICD; ΔIAC;
ΔBAC ; ΔACD; ΔBDC; ΔBDA;
ΔBLD; ΔLDK; ΔKLJ; ΔJLB;
ΔJBK; ΔBDK; ΔDBJ; ΔDKJ
ΔADJ; ΔCBK.
Thus, there are 26 triangles.

38. (a)

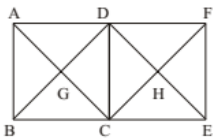


By simple counting, we get that number of triangles in the given figure = 34.

39. (b) After counting the number of triangles in the given figure, we get that, total number of triangles = 18.

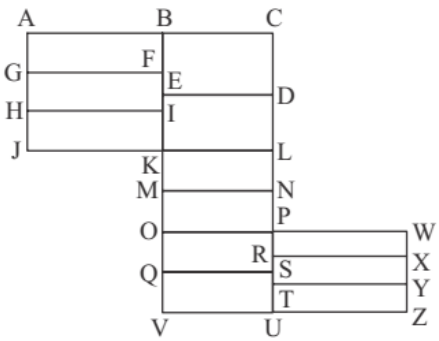
40. (d) Number of squares in the given figure are 16.

41. (b) According to figure,



The triangles are :
ΔAGD, ΔAGB, ΔADB, ΔACF, ΔABC, ΔADC,
ΔBGC, ΔBDC, ΔBDE, ΔDGC, ΔDHF, ΔDHC,
ΔDCF, ΔDEC, ΔDFE, ΔCHE, ΔCFE, ΔFHE
Thus, there are 18 triangles.

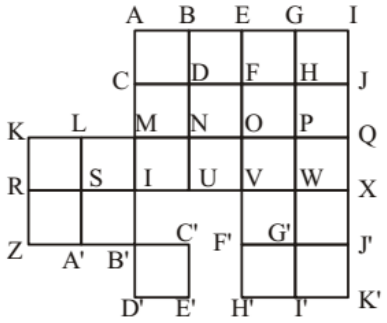
42. (d)



The simplest rectangler are ⇒ ABGF, GHFI, HIJK, BCED, EDKL, KLMN, MNOP, OPQR, QSVU, PWSX, SXTY, TYUZ = 12

The rectangle composed of two components each are ⇒ ABHI, GFJK, BCKL, EDMN, KLOP, MNQS, OPVU, PWTY, RXUZ = 9
The rectangle composed of three components each are ⇒ ABJK, BCMN, EDOP, KLQS, MNVU, PWUZ = 6
The rectangle composed of four and more than four components each are ⇒ BCOP, KLVU, EDQS, ACJL, BCVU, OWUZ = 6
Total rectangles are = 12 + 9 + 6 + 6 = 33.

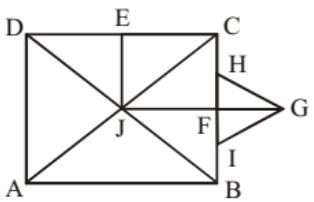
43. (c)



Smallest Square :
ABCD, BDFE, EFHG, GHIJ, CMND, DNOF, FOPH, HPQJ, KRSL, LSIM, MIUN, NUVO, OVWP, PWXQ, RZA'S, A'SIB', VF'G'W, G'WXJ', B'D'E'C', F'H'I'G', G'I'K'J'
Square formed with four squares -
AMOE, EOQI, CFVI, FVXJ, BNPG, DUWH, KZB'M, VH'K'X, OF'J'Q
Square formed with nine squares -
AGWI, BUXI
Hence, there are 32 squares are there in the given figure.

44. (a) There are 12 triangles in the given figure.

45. (b)



Triangles = ΔABD, ΔBCD, ΔACD, ΔABC, ΔADJ, ΔABJ, ΔBCJ, ΔCDJ, ΔDEJ, ΔCEJ, ΔBFJ, ΔCFJ, ΔGHI, ΔFGH, ΔFGI
Hence, total no. of triangles = 15

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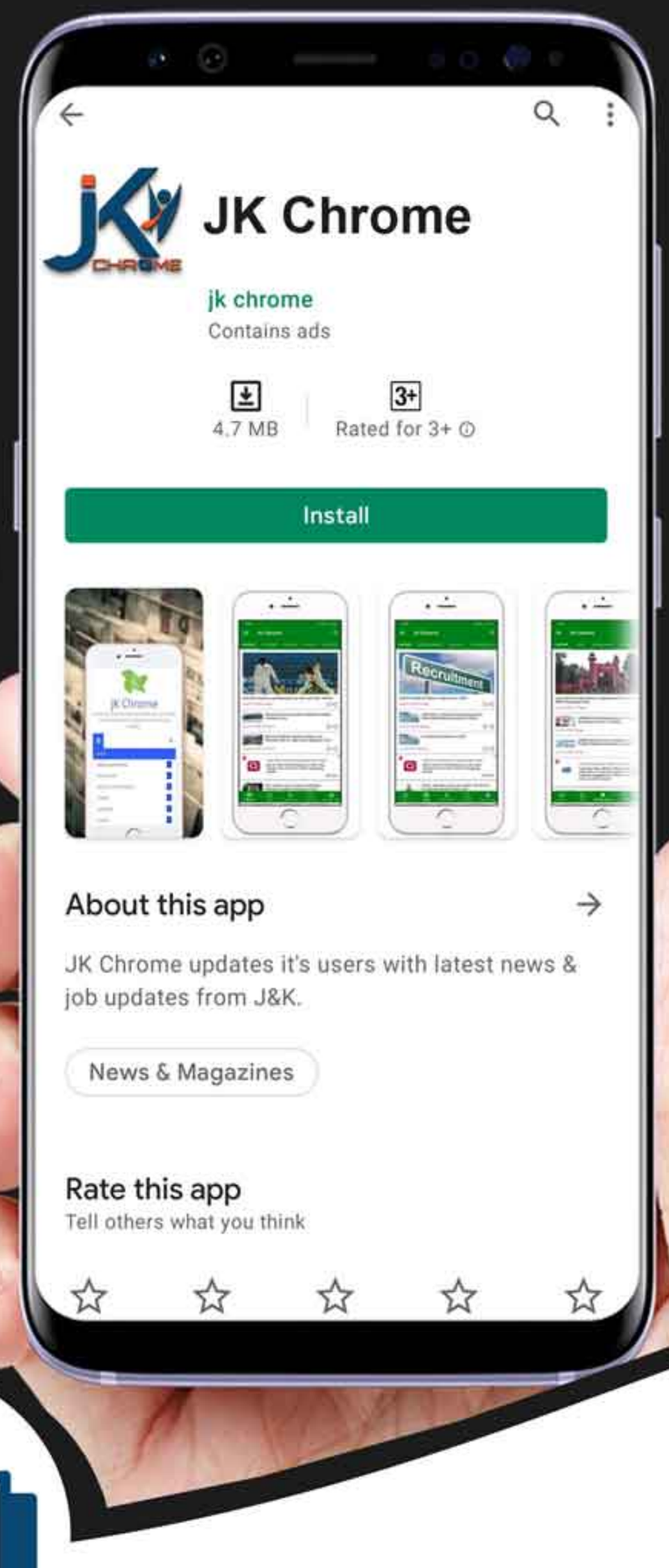

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