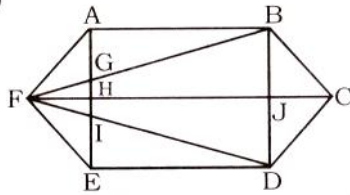


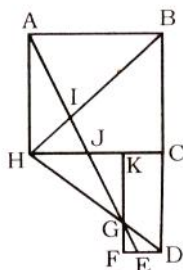
1. (d)



The triangles are:

- $\triangle AGF$ ;  $\triangle GHF$ ;  $\triangle FGH$ ;  $\triangle FIE$   
 $\triangle AFH$ ;  $\triangle AIF$ ;  $\triangle FEA$ ;  $\triangle FIG$   
 $\triangle FEG$ ;  $\triangle FEH$ ;  $\triangle BAG$ ;  $\triangle BFG$   
 $\triangle CDJ$ ;  $\triangle CBD$ ;  $\triangle DEI$ ;  $\triangle AFB$   
 $\triangle DEF$ ;  $\triangle FJB$ ;  $\triangle FCB$ ;  $\triangle FCD$   
 $\triangle FJD$ ;  $\triangle FBD$

2. (c)

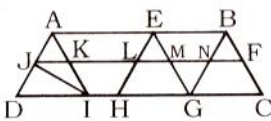


The triangles are :

- $\triangle ABH$ ,  $\triangle BCH$ ,  $\triangle AHI$ ,  $\triangle HIJ$ ,  
 $\triangle AHJ$ ,  $\triangle ABI$ ,  $\triangle GHJ$ ,  $\triangle GHI$ ,  
 $\triangle GJK$ ,  $\triangle GHK$ ,  $\triangle DFG$ ,  $\triangle EFG$ ,  
 $\triangle CDH$ ,  $\triangle BDH$ ,  $\triangle DEG$

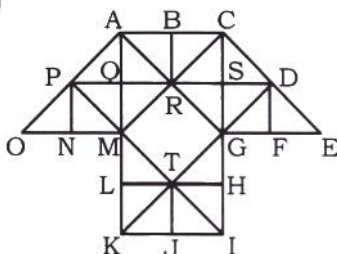
Thus there are 15 triangles.

3. (d)



The triangles are :  $\triangle ADI$ ,  $\triangle AJK$ ,  
 $\triangle DIJ$ ,  $\triangle IJK$ ,  $\triangle EGH$ ,  $\triangle ELM$ ,  $\triangle GMN$ ,  
 $\triangle GBE$ ,  $\triangle BFN$ ,  $\triangle BCG$ ,  $\triangle JAI$

4. (c)



The simplest triangles are:

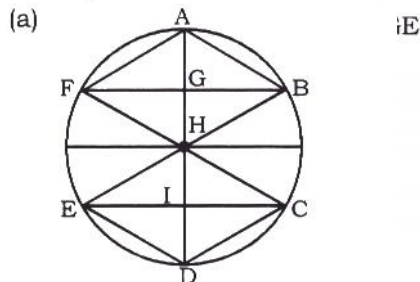
- $\triangle PNQ$ ;  $\triangle PNM$ ;  $\triangle MPQ$ ;  $\triangle MQR$ ;

- $\triangle MQR$ ;  $\triangle AQP$ ;  $\triangle AQP$ ;  $\triangle AQR$   
 $\triangle BRA$ ;  $\triangle BRC$ ;  $\triangle SRC$ ;  $\triangle SCD$   
 $\triangle DFG$ ;  $\triangle DFE$ ;  $\triangle TLM$ ;  $\triangle TJK$   
 $\triangle TLK$ ;  $\triangle TIH$ ;

The triangles composed of two components are:

- $\triangle PON$ ;  $\triangle PMA$ ;  $\triangle APR$ ;  $\triangle RAM$ ;  
 $\triangle RAC$ ;  $\triangle RAC$ ;  $\triangle RGC$ ;  $\triangle DGC$   
 $\triangle DGE$ ;  $\triangle MPR$ ;  $\triangle GRD$ ;  $\triangle DCR$ ;  
 $\triangle TMK$ ;  $\triangle TKI$ ;  $\triangle TIG$

The triangles composed of four components are:

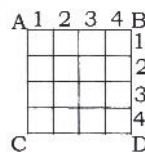


5.

The triangles are:

- $\triangle AGF$ ;  $\triangle AGB$ ;  $\triangle AFB$ ;  $\triangle HGF$   
 $\triangle HGB$ ;  $\triangle HFB$ ;  $\triangle HIE$ ;  $\triangle HIC$   
 $\triangle HEC$ ;  $\triangle DIE$ ;  $\triangle DIC$ ;  $\triangle DEC$   
 $\triangle FHA$ ;  $\triangle BHA$ ;  $\triangle CHD$ ;  $\triangle EHD$   
 $\triangle BEG$ ,  $\triangle CEG$ ,  $\triangle CDG$ ,  $\triangle ACG$ ,  
 $\triangle ABG$ ,  $\triangle BCG = 16$

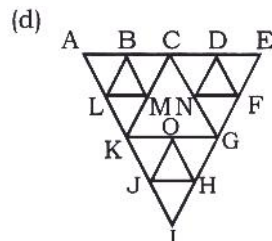
6. (d)



According to Formula

$$4 \times 4 + 3 \times 3 + 2 \times 2 + 1 \times 1 = 16 + 9 + 4 + 1 = 30 \text{ squares}$$

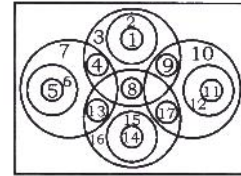
7.



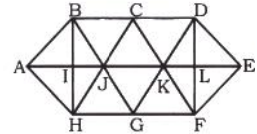
The triangles are:-

- $\triangle ALB$ ;  $\triangle BLM$ ;  $\triangle BMC$ ;  $\triangle CND$   
 $\triangle DNF$ ;  $\triangle DEF$ ;  $\triangle KLM$ ;  $\triangle GNF$   
 $\triangle CKG$ ;  $\triangle KJO$ ;  $\triangle OJH$ ;  $\triangle OHG$   
 $\triangle JHI$ ;  $\triangle KAC$ ;  $\triangle GCE$ ;  $\triangle IKG$ ;  
 $\triangle IAE$ ;

8. (c)

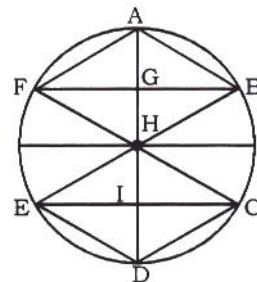


9. (c)



- $\triangle ABI$ ;  $\triangle AHI$ ;  $\triangle ABH$ ;  $\triangle BJI$   
 $\triangle HJI$ ;  $\triangle JBH$ ;  $\triangle JBC$ ;  $\triangle JHG$   
 $\triangle CJK$ ;  $\triangle GKJ$ ;  $\triangle KCD$ ;  $\triangle KGF$   
 $\triangle KDF$ ;  $\triangle DLE$ ;  $\triangle FLE$ ;  $\triangle EDF$   
 $\triangle DLK$ ;  $\triangle FLK$ ;  $\triangle BGH$ ;  $\triangle BHC$   
 $\triangle CHF$ ;  $\triangle GBD$ ;  $\triangle DFC$ ;  $\triangle DFG$   
 $\triangle BAJ$ ;  $\triangle HAJ$ ;  $\triangle DKE$ ;  $\triangle FKE$

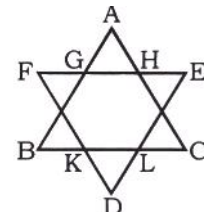
10. (a)



The triangles are:

- $\triangle AGF$ ;  $\triangle AGB$ ;  $\triangle AFB$ ;  $\triangle HGF$   
 $\triangle HGB$ ;  $\triangle HFB$ ;  $\triangle HIE$ ;  $\triangle HIC$   
 $\triangle HEC$ ;  $\triangle DIE$ ;  $\triangle DIC$ ;  $\triangle DEC$   
 $\triangle FHA$ ;  $\triangle BHA$ ;  $\triangle CHD$ ;  $\triangle EHD$

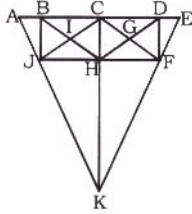
11. (c)



The triangles are:

$\triangle AGH$ ;  $\triangle EHI$ ;  $\triangle CIL$ ;  $\triangle DKL$ ;  
 $\triangle BJK$ ;  $\triangle FGJ$ ;  $\triangle ABC$ ;  $\triangle DEF$

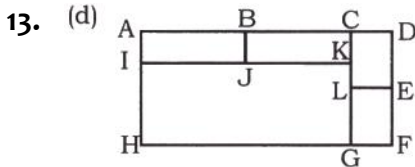
12. (b) Count the number of triangles in the upper part and take its double to get the total number of triangles.



The triangle are:

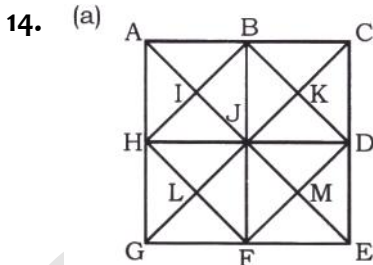
$\triangle ABJ$ ;  $\triangle IBJ$ ;  $\triangle IBC$ ;  $\triangle ICH$   
 $\triangle IJH$ ;  $\triangle BJH$ ;  $\triangle CHJ$ ;  $\triangle CBH$   
 $\triangle BCJ$ ;  $\triangle GCH$ ;  $\triangle GCD$ ;  $\triangle GDF$   
 $\triangle GHJ$ ;  $\triangle CHF$ ;  $\triangle DFH$ ;  $\triangle DCF$ ;  
 $\triangle CDH$ ;  $\triangle DEF$ ;  $\triangle KHJ$ ;  $\triangle KHF$ ;  
 $\triangle KCA$ ;  $\triangle KCE$ ;  $\triangle JAC$ ;  $\triangle HBD$ ;  
 $\triangle FCE$ ;  $\triangle CJF$ ;  $\triangle KJC$ ;  $\triangle KFC$ ;  
 $\triangle KAE$ ;  $\triangle KJF$ ;

Now total number of triangles  
 $= 2 \times 30 = 60$

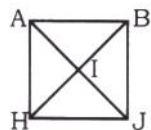


The Rectangles are :

ABJI ; BCKJ; CDEL; LEFG ;  
 IKGH ; CDFG ; ACGH; ACKI ;  
 ADFH



First of all take one block and count the number of triangles:



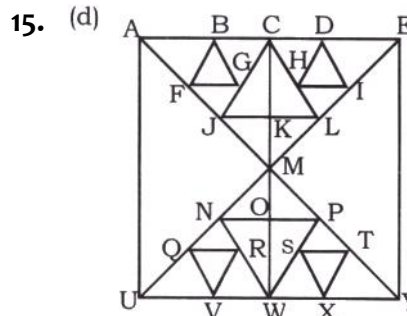
The triangles are:

$\triangle IAB$ ;  $\triangle IJB$ ;  $\triangle IAH$ ;  $\triangle IHJ$   
 $\triangle AHB$ ;  $\triangle ABJ$ ;  $\triangle AHJ$ ;  $\triangle BJH$

There are four such blocks.

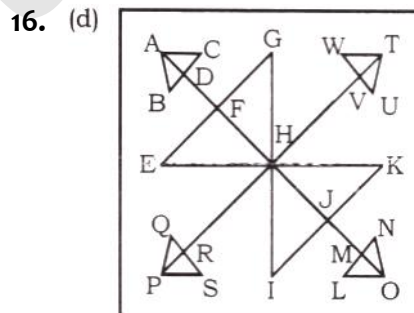
Therefore, the number of blocks.  
 Therefore, the number of simple triangles =  $4 \times 8 = 32$   
 Now, count the composite triangles:

$\triangle JAC$ ;  $\triangle JAG$ ;  $\triangle JCE$ ;  $\triangle JGE$   
 $\triangle BHD$ ;  $\triangle DBF$ ;  $\triangle FDH$ ;  $\triangle HBF$   
 $\triangle AGE$ ;  $\triangle CEG$ ;  $\triangle CAE$ ;  $\triangle AGC$ ;  
 Thus, there are more than 40 triangles.



The triangles are:

$\triangle AFB$ ;  $\triangle BFG$ ;  $\triangle GBC$ ;  $\triangle CKJ$   
 $\triangle JGF$ ;  $\triangle KMJ$ ;  $\triangle JCM$ ;  $\triangle ACJ$   
 $\triangle ACM$ ;  $\triangle HCD$ ;  $\triangle DIH$ ;  $\triangle IDE$   
 $\triangle CKL$ ;  $\triangle LHI$ ;  $\triangle LKM$ ;  $\triangle LCM$   
 $\triangle CLE$ ;  $\triangle CME$ ;  $\triangle MON$ ;  $\triangle WON$   
 $\triangle RVW$ ;  $\triangle QUV$ ;  $\triangle NRQ$ ;  $\triangle NUW$   
 $\triangle MNW$ ;  $\triangle MWU$ ;  $\triangle VRQ$ ;  $\triangle MOP$   
 $\triangle OPQ$ ;  $\triangle SWX$ ;  $\triangle XTS$ ;  $\triangle TXY$   
 $\triangle PST$ ;  $\triangle PMW$ ;  $\triangle PWY$ ;  $\triangle MWY$   
 $\triangle CJL$ ;  $\triangle MAE$ ;  $\triangle MAU$ ;  $\triangle MEY$   
 $\triangle MUY$ ;  $\triangle WPN$ ;  $\triangle AEU$ ;  $\triangle EAY$   
 $\triangle EYU$ ;  $\triangle AUW$ ;  $\triangle MLJ$ ;  $\triangle MPN$



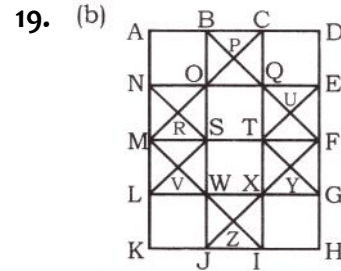
Each unit consists of three triangles and there are six units.  
 So, the total number of triangles would be 18.

The triangles are:

$\triangle ABD$ ;  $\triangle ADC$ ;  $\triangle ABC$ ;  $\triangle HEF$   
 $\triangle HFG$ ;  $\triangle HEG$ ;  $\triangle HIJ$ ;  $\triangle HJK$   
 $\triangle HIK$ ;  $\triangle OLM$ ;  $\triangle OMN$ ;  $\triangle OLN$

$\triangle PRS$ ;  $\triangle PRQ$ ;  $\triangle PSQ$ ;  $\triangle TVU$ ;  
 $\triangle TVW$ ;  $\triangle TUW$

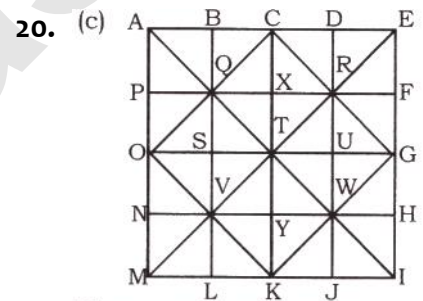
18. (a) Five blocks are visible and one block is hidden.



The squares are:

ABON, BCQO, CDEQ, NOSK,  
 OQTS, QEDT, MSWL, STXW,  
 TFGX, LWJK, WXIJ, XGHI,  
 ACTOM, BDFS, NQXL, OFGW,  
 MTIK, SFHJ, ADGL, NEHK,  
 MRSV, TUFY, MPFZ

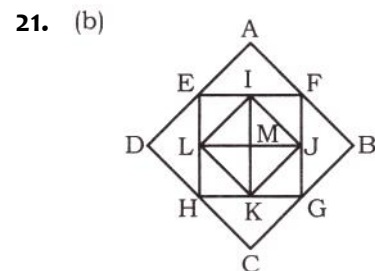
Thus, there are 23 squares.



The squares are:

ABQP, BCXQ, CDRX, DEFR,  
 PQSO, QXTS, XRUT, RFGU,  
 OSVN, STYV, TUWY, UGHV,  
 NVLM, VYKL, YWJK, WHIJ,  
 ACTO, CEGT, OTKM, TGIK,  
 BDUS, SUJL, QRWV, PXYN,  
 XFHY, OQTV, VTWK, OCRT,  
 TRGW, OCGK, AEIM, ADWN,  
 BEHV, PRJM, QFIL

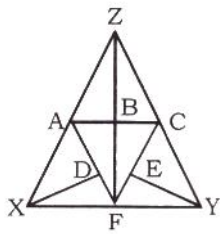
There are 35 squares.



The squares are :

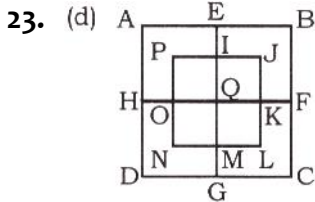
EFGH, EIML, IFJM, MJGK,  
 LMKH, ABCD, IJKL

22. (a)



The triangles are:

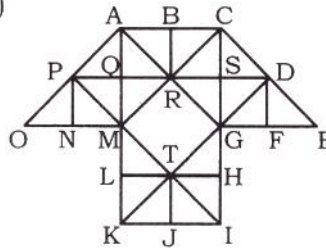
- $\triangle ZAB$ ;  $\triangle ZBC$ ;  $\triangle XAD$ ;  $\triangle XDF$ ;
- $\triangle FAB$ ;  $\triangle FBC$ ;  $\triangle YEC$ ;  $\triangle FEY$ ;
- $\triangle ZAC$ ;  $\triangle XAF$ ;  $\triangle YFC$ ;  $\triangle FAC$ ;
- $\triangle ZFX$ ;  $\triangle ZFY$ ;  $\triangle AFZ$ ;  $\triangle CFZ$ ;
- $\triangle ZXY$



The squares are:

- ABCD ; AEQH ; EBFQ ; HQGD;
- QFCG ; PJLN ; PIQO ; IJKQ;
- OQMN ; QKLM

24. (c)



The simplest triangles are:

- $\triangle PNQ$ ;  $\triangle PNM$ ;  $\triangle MPQ$ ;  $\triangle MQR$ ;
- $\triangle MQR$ ;  $\triangle AQP$ ;  $\triangle AQP$ ;  $\triangle AQR$
- $\triangle BRA$ ;  $\triangle BRC$ ;  $\triangle SRC$ ;  $\triangle SCD$
- $\triangle DFG$ ;  $\triangle DFE$ ;  $\triangle TLM$ ;  $\triangle TJK$
- $\triangle TLK$ ;  $\triangle TIH$ ;

The triangles composed of two components are:

- $\triangle PON$ ;  $\triangle PMA$ ;  $\triangle APR$ ;  $\triangle RAM$ ;
- $\triangle RAC$ ;  $\triangle RAC$ ;  $\triangle RGC$ ;  $\triangle DGC$
- $\triangle DGE$ ;  $\triangle MPR$ ;  $\triangle GRD$ ;  $\triangle DCR$ ;
- $\triangle TMK$ ;  $\triangle TKI$ ;  $\triangle TIG$

The triangles composed of four components are:

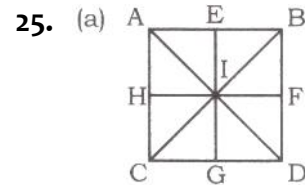
- $\triangle AMO$ ;  $\triangle AMC$ ;  $\triangle CAG$ ;  $\triangle CGE$
- $\triangle MKI$ ;  $\triangle GIK$

Other triangles are

- $\triangle SPI$ ;  $\triangle DQK$

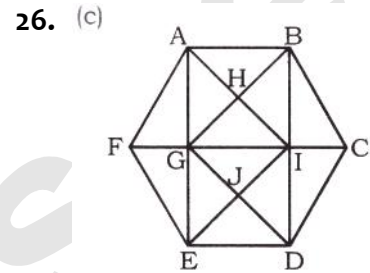
Total number of triangles

$$18 + 14 + 6 + 2 = 40$$



The triangles are:

- $\triangle AIH$ ;  $\triangle AIE$ ;  $\triangle EIB$ ;  $\triangle BFI$ ;
- $\triangle IHC$ ;  $\triangle IGC$ ;  $\triangle IGD$ ;  $\triangle DFI$ ;
- $\triangle IAB$ ;  $\triangle IBD$ ;  $\triangle ICD$ ;  $\triangle IAC$ ;
- $\triangle BAC$ ;  $\triangle ACD$ ;  $\triangle BDC$ ;  $\triangle BDA$ ;



The triangles are:

- $\triangle FEB$ ;  $\triangle CBD$ ;  $\triangle FAG$ ;  $\triangle FEG$
- $\triangle BCI$ ;  $\triangle CDI$ ;  $\triangle AFI$ ;  $\triangle EFI$
- $\triangle BGC$ ;  $\triangle DCG$ ;  $\triangle AGI$ ;  $\triangle BIH$
- $\triangle AGB$ ;  $\triangle ABI$ ;  $\triangle HAB$ ;  $\triangle HBI$
- $\triangle HGI$ ;  $\triangle HAG$ ;  $\triangle GEI$ ;  $\triangle GED$
- $\triangle IDE$ ;  $\triangle IDG$ ;  $\triangle JGI$ ;  $\triangle JDI$
- $\triangle JGE$ ;  $\triangle JDE$ ;  $\triangle AIE$ ;  $\triangle BGD$