The triangles composed of three components each are APF, EQB, BQH, GVC, CVJ, IUD, DUL and KPA i.e. 8 in number.

The triangles composed of six components each are ASB, BSG, CSD, DSA, AKF, EBH, GGJ and IDL i.e. 8 in number.

The triangles composed of twelve components each are ADB, ABC, BCD and CDA i.e. 4 in number.

Total number of triangles in the figure = 12 + 4 + 8 + 8 + 4 = 36.

13. What is the number of triangles that can be formed whose vertices are the vertices of an octagon but have only one side common with that of octagon?
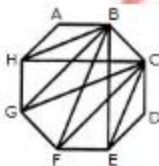

(Fig.1)

When the triangles are drawn in an octagon with vertices same as those of the octagon and having one side common to that of the octagon, the figure will appear as shown in (Fig. 1).

(Fig. 2)

Now, we shall first consider the triangles having only one side AB common with octagon ABCDEFGH and having vertices common with the octagon (See Fig. 2). Such triangles are ABD, ABE, ABF and ABG i.e. 4 in number.
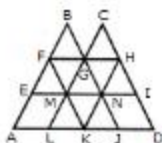

(Fig.3)

Similarly, the triangles having only one side BC common with the octagon and also having vertices common with the octagon are BCE, BCF, BCG and BCH (as shown in Fig. 3). i.e. There are 4 such triangles.

This way, we have 4 triangles for each side of the octagon. Thus, there are 8 x 4 = 32 such triangles.

14. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are BFG, CGH, EFM, FMG, GMN, GHN, HNI, LMK, MNK and KNJ i.e. 10 in number.

The triangles composed of three components each are FAK and HKD i.e. 2 in number.

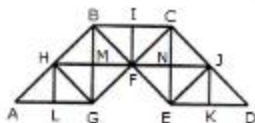The triangles composed of four components each are BEN, CMI, GLJ and FHK i.e. 4 in number.

The triangles composed of eight components each are BAJ and OLD i.e. 2 in number.

Thus, there are 10 + 2 + 4 + 2 = 18 triangles in the given figure.

15. Find the number of triangles in the given figure.

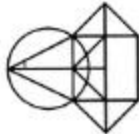The figure may be labelled as shown.

The simplest triangles are AHL, LHG, GHM, HMB, GMF, BMF, BIF, CIF, FNC, CNJ, FNE, NEJ, EKJ and JKD i.e. 14 in number.

The triangles composed of two components each are AGH, BHG, HBF, BFG, HFG, BCF, CJF, CJE, JEF, CFE and JED i.e. 11 in number.
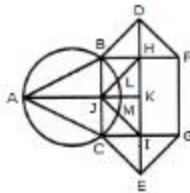
The triangles composed of four components each are ABG, CBG, BCE and CED i.e. 4 in number.

Total number of triangles in the given figure = 14 + 11 + 4 = 29.

16. Find the number of triangles in the given figure.

The figure may be labeled as shown.

The simplest triangles are ABJ, ACJ, BDH, DHF, CIE and GIE i.e. 6 in number.

The triangles composed of two components each are ABC, BDF, CEG, BHJ, JHK, JKI and CJI i.e. 7 in number.

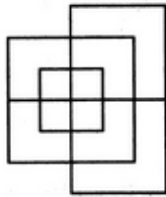There is only one triangle JHI which is composed of four components.

Thus, there are 6 + 7 + 1 = 14 triangles in the given figure

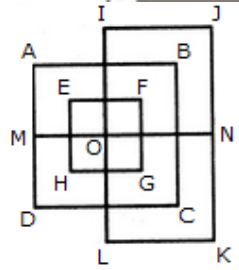Next issue we will discuss other analytical problem solving questions.

Reasoning

One of the important topic in Bank Po's is nonverbal analytical reasoning. Now we will discuss some examples.

1. Find the minimum number of straight lines required to make the given figure.
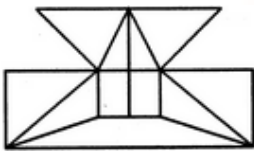
The figure may be labeled as shown.

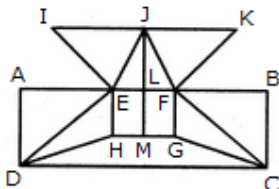The horizontal lines are IJ, AB, EF, MN, HG, DC and LK i.e. 7 in number.

The vertical lines are AD, EH, IL, FG, BC and JK i.e. 6 in number.

Thus, there are 7 + 6 = 13 straight lines in the figure.

2. Find the minimum number of straight lines required to make the given figure.

.The figure may be labelled as shown.

The horizontal lines are IK, AB, HG and DC i.e. 4 in number.

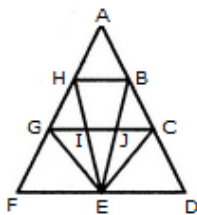The vertical lines are AD, EH, JM, FG and BC i.e. 5 in number.

The slanting lines are IE, JE, JF, KF, DE, DH, FC and GC i.e. 8 is number.

Thus, there are 4 + 5 + 8 = 17 straight lines in the figure.

3. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are AHB, GHI, BJC, GFE, GIE, IJE, CEJ and CDE i.e. 8 in number.

The triangles composed of two components each are HEG, BEC, HBE, JGE and ICE i.e. 5 in number.
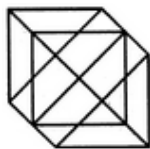
The triangles composed of three components each are FHE, GCE and BED i.e. 3 in number.

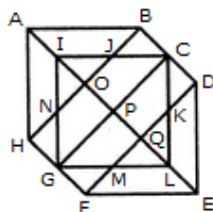There is only one triangle i.e. AGC composed of four components.

There is only one triangle i.e. AFD composed of nine components.

Thus, there are 8 + 5 + 3 + 1 + 1 = 18 triangles in the given figure.

4. Find the number of triangles in the given figure.
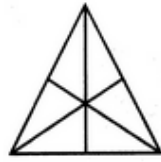

The figure may be labelled as shown.

The simplest triangles are IJO, BCJ, CDK, KQL, MLQ, GFM, GHN and NIO i.e 8 in number.

The triangles composed of two components each are ABO, AHO, NIJ, IGP, ICP, DEQ, FEQ, KLM, LCP and LGP i.e.10 in number.
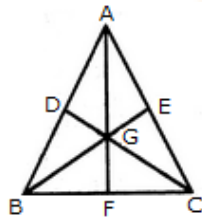
The triangles composed of four components each are HAB, DEF, LGI, GIC, ICL and GLG i.e. 6 in number.

Total number of triangles in the figure = 8 + 10 + 6 = 24.

5. Find the number of triangles in the given figure.

The figure may be labelled as shown.

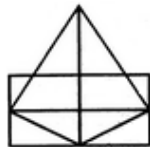The simplest triangles are AGE, EGC, GFC, BGF, DGB and ADG i.e. 6 in number.

The triangles composed of two components each are AGC, BGC and ABG i.e. 3 in number.

The triangles composed of three components each are AFC, BEC, BDC, ABF, ABE and DAC i.e. 6 in number.
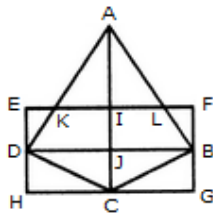
There is only one triangle i.e. ABC composed of six components.

Thus, there are 6 + 3 + 6 + 1 = 16 triangles in the given figure.

6. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are AKI, AIL, EKD, LFB, DJC, BJC, DHC and BCG i.e. 8 in number.
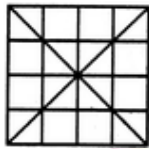
The triangles composed of two components each are AKL, ADJ, AJB and DBC i.e. 4 in number.

The triangles composed of the three components each are ADC and ABC i.e. 2 in number.
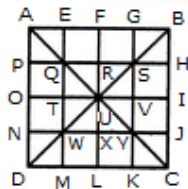
There is only one triangle i.e. ADB composed of four components.

Thus, there are 8+ 4 + 2 + 1= 15 triangles in the figure.

7. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are APQ, AEQ, QTU, QRU, BGS, BHS, RSU, SUV, TUW, UWX, NWD, WDM, UVY, UXY, JCY and YKC i.e. 16 in number.

The triangles composed of two components each are QUW, QSU, SYU and UWY i.e. 4 in number.

The triangles composed of three components each are AOU, AFU, FBU, BIU, UIC, ULC, ULD and OUD i.e. 8 in number.

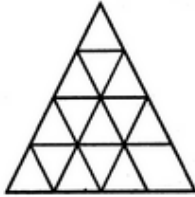The triangles composed of four components each are QYW, QSW, QSY and SYW i.e. 4 in number.

The triangles composed of six components each are AUD, ABU, BUC and DUC i.e. 4 in number.

The triangles composed of seven components each are QMC, ANY, EBW, PSD, CQH, AGY, DSK and BJW i.e. 8 in number.
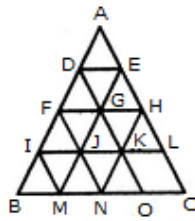
The triangles composed of twelve components each are ABD, ABC, BCD and ACD i.e. 4 in number.

Thus, there are 16 + 4 + 8 + 4 + 4 + 8 + 4 = 48 triangles in the figure.

8. Find the minimum number of straight lines required to make the given figure.
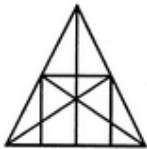

The figure may be labelled as shown.

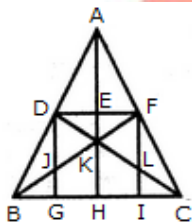The horizontal lines are DE, FH, IL and BC i.e. 4 in number.

The slanting lines are AC, DO, FN, IM, AB, EM and HN i.e. 7 in number.

Thus, there are 4 + 7 = 11 straight lines in the figure.

9. What is the number of straight lines and the number of triangles in the given figure?

The figure may be labelled as shown.

The Horizontal lines are DF and BC i.e. 2 in number.

The Vertical lines are DG, AH and FI i.e. 3 in number.

The Slanting lines are AB, AC, BF and DC i.e. 4 in number.

Thus, there are 2 + 3 + 4 = 9 straight lines in the figure.

Now, we shall count the number of triangles in the figure.

The simplest triangles are ADE, AEF, DEK, EFK, DJK, FLK, DJB, FLC, BJG and LIC i.e. 10 in number.

The triangles composed of two components each are ADF, AFK, DFK, ADK, DKB, FCK, BKH, KHC, DGB and FIC i.e. 10 in number.

The triangles composed of three components each are DFJ and DFL i.e. 2 in number.

The triangles composed of four components each are ABK, ACK, BFI, CDG, DFB, DFC and BKC i.e. 7 in number.

The triangles composed of six components each are ABH, ACH, ABF, ACD, BFC and CDB i.e. 6 in number.

There is only one triangle i.e. ABC composed of twelve components.

There are 10 + 10 + 2 + 7 + 6+ 1 = 36 triangles in the figure.

10. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are GLK, DLJ, DJM, HMN, QRE, IRA, IPA and FPO i.e. 8 in number.

The triangles having two components each are BDO, CDQ, DLM, PRA, KFI, NEI, HJI, GJI, DKI and DNI i.e. 10 in number.

The triangles having four components each are DIE, DFI, DOA, DQA and GHI i.e. 5 in number.
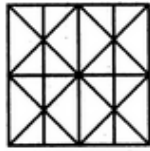
The triangles having six components each are DCA and DBA i.e. 2 in number.

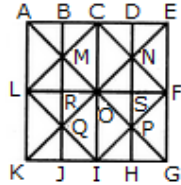DEF is the only triangle having eight components.

ABC is the only triangle having twelve components.

Thus, there are 8+10+ 5 + 2+1 + 1 = 27 triangles in the figure.

11. Find the minimum number of straight lines required to make the given figure.
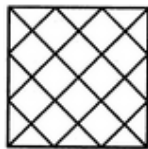

The figure may be labelled as shown.

The horizontal lines are AK, BJ, CI, DH and EG i.e. 5 in number.

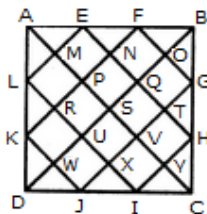The vertical lines are AE, LF and KG i.e. 3 in number.

The slanting lines are LC, CF, FI, LI, EK and AG i.e. 6 in number.

Thus, there are 5 + 3 + 6 = 14 straight lines in the figure.

12. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are AML, LRK, KWD, DWJ, JXI, IYC, CYH, HTG, GOB, BOF, FNE and EMA i.e. 12 in number.

The triangles composed of two components each are AEL, KDJ, HIC and FBG i.e. 4 in number.
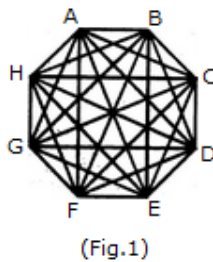
The triangles composed of three components each are APF, EQB, BQH, GVC, CVJ, IUD, DUL and KPA i.e. 8 in number.

The triangles composed of six components each are ASB, BSG, CSD, DSA, AKF, EBH, GGJ and IDL i.e. 8 in number.
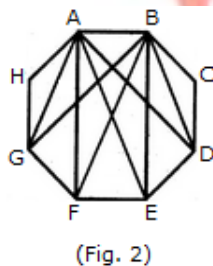
The triangles composed of twelve components each are ADB, ABC, BCD and CDA i.e. 4 in number.

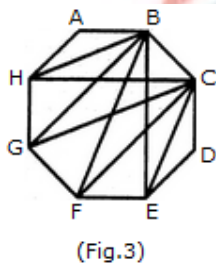Total number of triangles in the figure = 12 + 4 + 8 + 8 + 4 = 36.

13. What is the number of triangles that can be formed whose vertices are the vertices of an octagon but have only one side common with that of octagon?

(Fig.1)

When the triangles are drawn in an octagon with vertices same as those of the octagon and having one side common to that of the octagon, the figure will appear as shown in (Fig. 1).
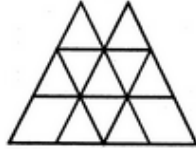

(Fig. 2)

Now, we shall first consider the triangles having only one side AB common with octagon ABCDEFGH and having vertices common with the octagon (See Fig. 2).Such triangles are ABD, ABE, ABF and ABG i.e. 4 in number.
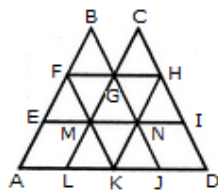

(Fig.3)

Similarly, the triangles having only one side BC common with the octagon and also having vertices common with the octagon are BCE, BCF, BCG and BCH (as shown in Fig. 3). i.e. There are 4 such triangles.

This way, we have 4 triangles for each side of the octagon. Thus, there are 8 x 4 = 32 such triangles.

14. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are BFG, CGH, EFM, FMG, GMN, GHN, HNI, LMK, MNK and KNJ i.e. 10 in number.
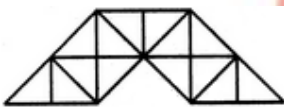
The triangles composed of three components each are FAK and HKD i.e. 2 in number.

The triangles composed of four components each are BEN, CMI, GLJ and FHK i.e. 4 in number.
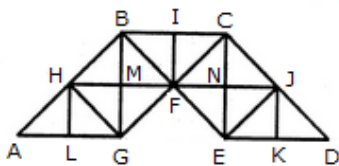
The triangles composed of eight components each are BAJ and OLD i.e. 2 in number.

Thus, there are 10 + 2 + 4 + 2 = 18 triangles in the given figure.

15. Find the number of triangles in the given figure.

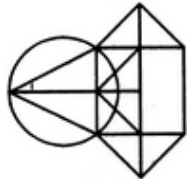The figure may be labelled as shown.

The simplest triangles are AHL, LHG, GHM, HMB, GMF, BMF, BIF, CIF, FNC, CNJ, FNE, NEJ, EKJ and JKD i.e. 14 in number.

The triangles composed of two components each are AGH, BHG, HBF, BFG, HFG, BCF, CJF, CJE, JEF, CFE and JED i.e. 11 in number.
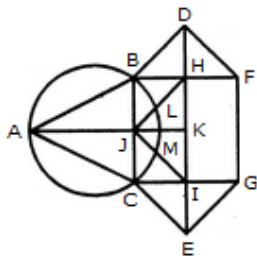
The triangles composed of four components each are ABG, CBG, BCE and CED i.e. 4 in number.

Total number of triangles in the given figure = 14 + 11 + 4 = 29.

16. Find the number of triangles in the given figure.

The figure may be labeled as shown.

The simplest triangles are ABJ, ACJ, BDH, DHF, CIE and GIE i.e. 6 in number.

The triangles composed of two components each are ABC, BDF, CEG, BHJ, JHK, JKI and CJI i.e. 7 in number.

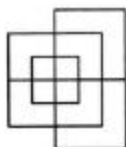There is only one triangle JHI which is composed of four components.

Thus, there are 6 + 7 + 1 = 14 triangles in the given figure

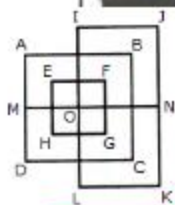Next issue we will discuss other analytical problem solving questions.

Reasoning

One of the important topic in Bank Po's is nonverbal analytical reasoning. Now we will discuss some examples.

1. Find the minimum number of straight lines required to make the given figure.

The figure may be labeled as shown.
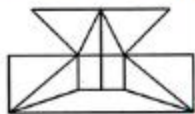
The horizontal lines are IJ, AB, EF, MN, HG, DC and LK i.e. 7 in number.

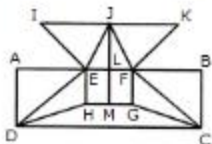The vertical lines are AD, EH, IL, FG, BC and JK i.e. 6 in number.

Thus, there are 7 + 6 = 13 straight lines in the figure.

2. Find the minimum number of straight lines required to make the given figure.

.The figure may be labelled as shown.

The horizontal lines are IK, AB, HG and DC i.e. 4 in number.

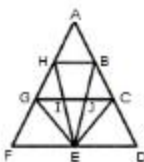The vertical lines are AD, EH, JM, FG and BC i.e. 5 in number.

The slanting lines are IE, JE, JF, KF, DE, DH, FC and GC i.e. 8 is number.

Thus, there are 4 + 5 + 8 = 17 straight lines in the figure.

3. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are AHB, GHI, BJC, GFE, GIE, IJE, CEJ and CDE i.e. 8 in number.

The triangles composed of two components each are HEG, BEC, HBE, JGE and ICE i.e. 5 in number.

The triangles composed of three components each are FHE, GCE and BED i.e. 3 in number.

There is only one triangle i.e. AGC composed of four components.
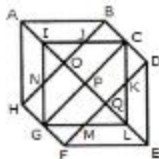
There is only one triangle i.e. AFD composed of nine components.

Thus, there are 8 + 5 + 3 + 1 + 1 = 18 triangles in the given figure.

4. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are IJO, BCJ, CDK, KQL, MLQ, GFM, GHN and NIO i.e. 8 in number.

The triangles composed of two components each are ABO, AHO, NIJ, IGP, ICP, DEQ, FEQ, KLM, LCP and LGP i.e.10 in number.
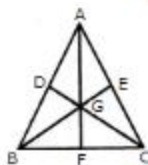
The triangles composed of four components each are HAB, DEF, LGI, GIC, ICL and GLG i.e. 6 in number.

Total number of triangles in the figure = 8 + 10 + 6 = 24.

5. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are AGE, EGC, GFC, BGF, DGB and ADG i.e. 6 in number.

The triangles composed of two components each are AGC, BGC and ABG i.e. 3 in number.

The triangles composed of three components each are AFC, BEC, BDC, ABF, ABE and DAC i.e. 6 in number.

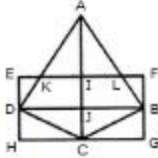There is only one triangle i.e. ABC composed of six components.

Thus, there are 6 + 3 + 6 + 1 = 16 triangles in the given figure.

6. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are AKI, AIL, EKD, LFB, DJC, BJC, DHC and BCG i.e. 8 in number.
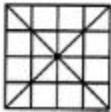
The triangles composed of two components each are AKL, ADJ, AJB and DBC i.e. 4 in number.

The triangles composed of the three components each are ADC and ABC i.e. 2 in number.

There is only one triangle i.e. ADB composed of four components.

Thus, there are 8+ 4 + 2 + 1= 15 triangles in the figure.

7. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are APQ, AEQ, QTU, QRU, BGS, BHS, RSU, SUV, TUW, UWX, NWD, WDM, UVY, UXY, JCY and YKC i.e. 16 in number.

The triangles composed of two components each are QUW, QSU, SYU and UWY i.e. 4 in number.

The triangles composed of three components each are AOU, AFU, FBU, BIU, UIC, ULC, ULD and OUD i.e. 8 in number.

The triangles composed of four components each are QYW, QSW, QSY and SYW i.e. 4 in number.

The triangles composed of six components each are AUD, ABU, BUC and DUC i.e. 4 in number.

The triangles composed of seven components each are QMC, ANY, EBW, PSD, CQH, AGY, DSK and BJW i.e. 8 in number.
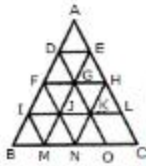
The triangles composed of twelve components each are ABD, ABC, BCD and ACD i.e. 4 in number.

Thus, there are 16 + 4 + 8 + 4 + 4 + 8 + 4 = 48 triangles in the figure.

8. Find the minimum number of straight lines required to make the given figure.

The figure may be labelled as shown.

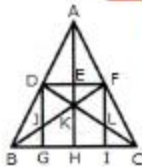The horizontal lines are DE, FH, IL and BC i.e. 4 in number.

The slanting lines are AC, DO, FN, IM, AB, EM and HN i.e. 7 in number.

Thus, there are 4 + 7 = 11 straight lines in the figure.

9. What is the number of straight lines and the number of triangles in the given figure?

The figure may be labelled as shown.

The Horizontal lines are DF and BC i.e. 2 in number.

The Vertical lines are DG, AH and FI i.e. 3 in number.

The Slanting lines are AB, AC, BF and DC i.e. 4 in number.

Thus, there are 2 + 3 + 4 = 9 straight lines in the figure.

Now, we shall count the number of triangles in the figure.

The simplest triangles are ADE, AEF, DEK, EFK, DJK, FLK, DJB, FLC, BJG and LIC i.e. 10 in number.

The triangles composed of two components each are ADF, AFK, DFK, ADK, DKB, FCK, BKH, KHC, DGB and FIC i.e. 10 in number.

The triangles composed of three components each are DFJ and DFL i.e. 2 in number.

The triangles composed of four components each are ABK, ACK, BFI, CDG, DFB, DFC and BKC i.e. 7 in number.

The triangles composed of six components each are ABH, ACH, ABF, ACD, BFC and CDB i.e. 6 in number.

There is only one triangle i.e. ABC composed of twelve components.

There are 10 + 10 + 2 + 7 + 6 + 1 = 36 triangles in the figure.

10. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are GLK, DLJ, DJM, HMN, QRE, IRA, IPA and FPO i.e. 8 in number.

The triangles having two components each are BDO, CDQ, DLM, PRA, KFI, NEI, HJI, GJI, DKI and DNI i.e. 10 in number.

The triangles having four components each are DIE, DFI, DOA, DQA and GHI i.e. 5 in number.
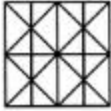
The triangles having six components each are DCA and DBA i.e. 2 in number.

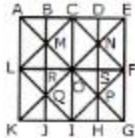DEF is the only triangle having eight components.

ABC is the only triangle having twelve components.

Thus, there are 8+10+ 5 + 2+1 + 1 = 27 triangles in the figure.

11. Find the minimum number of straight lines required to make the given figure.

The figure may be labelled as shown.

The horizontal lines are AK, BJ, CI, DH and EG i.e. 5 in number.

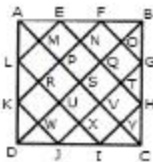The vertical lines are AE, LF and KG i.e. 3 in number.

The slanting lines are LC, CF, FI, LI, EK and AG i.e. 6 in number.

Thus, there are 5 + 3 + 6 = 14 straight lines in the figure.

12. Find the number of triangles in the given figure.

The figure may be labelled as shown.

The simplest triangles are AML, LRK, KWD, DWJ, JXI, IYC, CYH, HTG, GOB, BOF, FNE and EMA i.e. 12 in number.

The triangles composed of two components each are AEL, KDJ, HIC and FBG i.e. 4 in number.