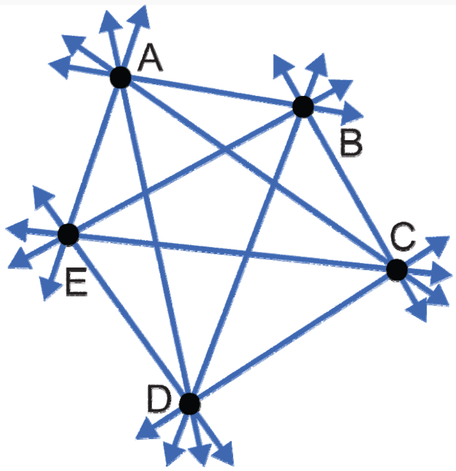
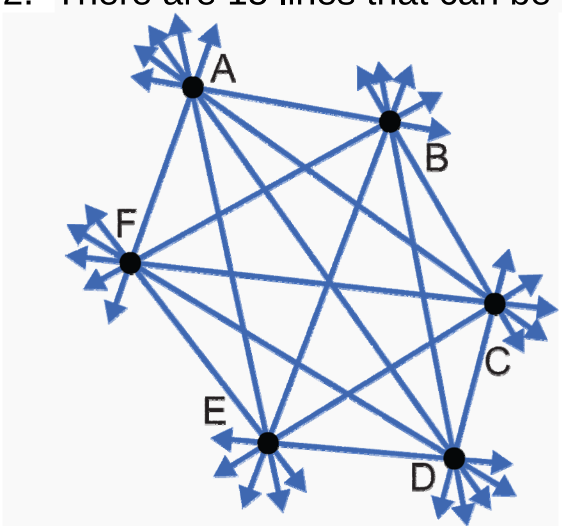
1. There are 10 lines that can be drawn that contain two of the five points.



2. There are 15 lines that can be drawn that contain two of the six points.



3. Answer: There are 45 lines
   Detailed Solution:
   Given ten points, how many lines can be drawn that contains two of the ten points.

   Use the formula: $\frac{n(n-1)}{2}$ where $n = 10$

   $$\frac{10(10-1)}{2}$$

   $$\frac{10(9)}{2}$$

   $$\frac{90}{2}$$

   $$45$$

   Therefore, 45 lines can be drawn.

4. There are 105 lines.

5. Answer: There are 190 lines
   Detailed Solution:
   Given twenty points, how many lines can be drawn that contains two of the ten points.

   Use the formula: $\frac{n(n-1)}{2}$ where $n = 20$

   $$\frac{20(20-1)}{2}$$

   $$\frac{20(19)}{2}$$

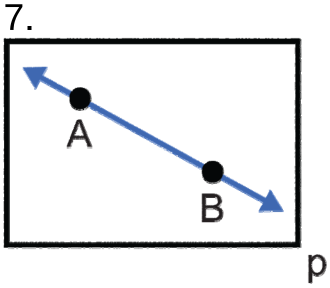
   $$\frac{380}{2}$$

   $$190$$

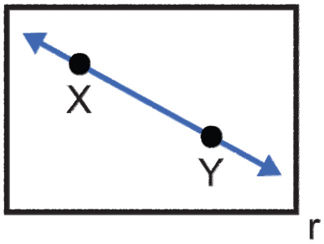
   Therefore, 190 lines can be drawn.

6. There are 300 lines.

7.



8.



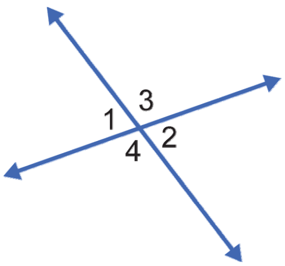
9. Since A and B are in both planes p and r, then they are in the intersection of the planes.

   Since planes intersect at a line, points A and B must be on the line. Therefore points A and B are collinear.

10. There are 10 planes that can be created.
    After all the duplicates are removed, the remaining sets are:
    ABC, ABD, ABE, ACE, BCD, BCE, CDA, DEA, DEB, CDE

11. Prove theorem 1.2.1:

If two angles are vertical angles, then they are congruent.



Given: $\angle 1$ and $\angle 2$ are vertical angles
Prove: $\angle 1 \cong \angle 2$

Statement:	Reason:
1. $\angle 1$ and $\angle 2$ are vertical angles	1. Given.
2. $\angle 1$ and $\angle 4$ form a linear pair $\angle 2$ and $\angle 4$ form a linear pair	2. Definition of a linear pair.
3. $\angle 1$ and $\angle 4$ are supplementary $\angle 2$ and $\angle 4$ are supplementary	3. Postulate 1.2.1: If two angles form a linear pair, then they are supplementary angles.
4. $\angle 1 \cong \angle 2$	4. Theorem 1.2.2: If two angles are supplementary to the same angle, then they are congruent.

12. Prove Theorem 1.2.2:

If two angles are supplementary to the same angle, then they are congruent.

Given: $\angle 1$ and $\angle 3$ are supplementary
$\angle 2$ and $\angle 3$ are supplementary

Prove: $\angle 1 \cong \angle 2$

Statement:	Reason:
1. $\angle 1$ and $\angle 3$ are supplementary $\angle 2$ and $\angle 3$ are supplementary	1. Given.
2. $\angle 1 + \angle 3 = 180^o$ $\angle 2 + \angle 3 = 180^o$	2. Definition of supplementary angles.
3. $\angle 1 + \angle 3 \cong \angle 2 + \angle 3$	3. Substitution.
4. $\angle 1 \cong \angle 2$	4. Subtraction of $\angle 3$ from both sides.

13. Prove Theorem 1.2.4:

If two angles are congruent and supplementary, then each angle is a right angle.

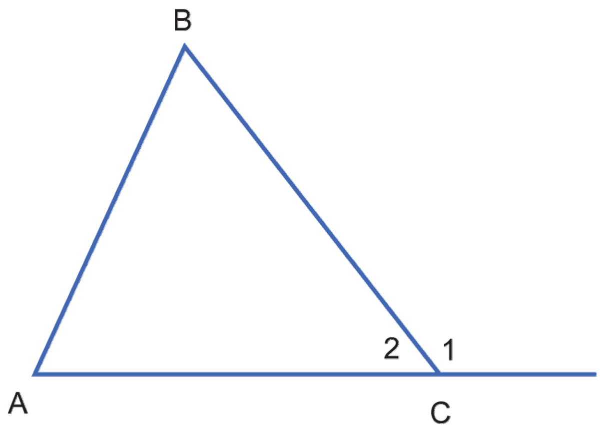
Given: $\angle 1$ and $\angle 2$ are supplementary
$\angle 1 \cong \angle 2$

Prove: $\angle 1 = 90^o$ and $\angle 2 = 90^o$

Statement:	Reason:
1. $\angle 1$ and $\angle 2$ are supplementary $\angle 1 \cong \angle 2$	1. Given.
2. $\angle 1 + \angle 2 = 180^o$	2. Definition of supplementary.
3. $\angle 1 + \angle 1 = 180^o$	3. Substitution, since $\angle 1 \cong \angle 2$.
4. $2(\angle 1) = 180^o$	4. Combine like terms.
5. $\angle 1 = 90^o$	5. Divided both sides by 2.
6. $\angle 2 = 90^o$	6. Since $\angle 1 \cong \angle 2$.

14. Prove Theorem 1.2.6:

An exterior angle of a triangle is equal to the sum of the two nonadjacent interior angles.



Given: $\angle 1$ is an exterior angle of a triangle

Prove: $\angle 1 = \angle A + \angle B$

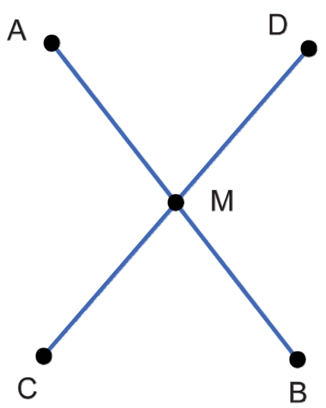
Statement:	Reason:
1. $\angle A + \angle B + \angle 2 = 180^o$	1. Angle sum of a triangle.
2. $\angle 1$ and $\angle 2$ form a linear pair	2. Definition of a linear pair.
3. $\angle 1$ and $\angle 2$ are supplementary angles	3. Postulate 1.2.1: If two angles form a linear pair, then they are supplementary angles.
4. $\angle 1 + \angle 2 = 180^o$	4. Definition of supplementary angles.
5. $\angle 1 + \angle 2 = \angle A + \angle B + \angle 2$	5. Substitution from lines 1 and 4.
6. $\angle 1 = \angle A + \angle B$	6. Subtraction of angle 2.

15.

Given: $\overline{AM} \cong \overline{MD}$

M is the midpoint of $\overline{AB}$

Prove: $\overline{MD} \cong \overline{MB}$

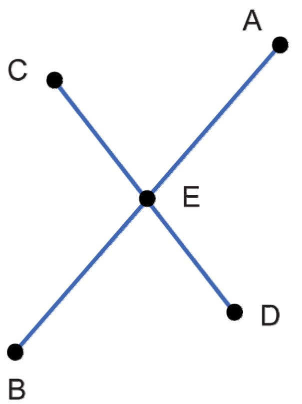


Statement:	Reason:
1. M is the midpoint of $\overline{AB}$.	1. Given.
2. $\overline{AM} \cong \overline{BM}$	2. Definition of midpoint.
3. $\overline{AM} \cong \overline{MD}$	3. Given.
4. $\overline{MB} \cong \overline{MD}$	4. Substitution.

16.

Given: $\overline{CE} \cong \overline{BE}$
$AB > CD$

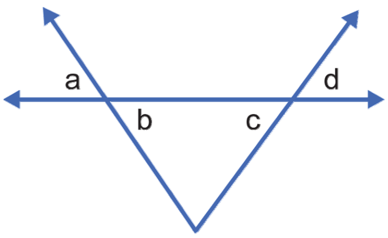
Prove: $AE > DE$



Statement:	Reason:
1. $\overline{CE} \cong \overline{BE}$	1. Given.
2. $CE = BE$	2. Definition of congruent segments.
3. $AB = AE + BE$	3. Definition of segment addition.
4. $AB = AE + CE$	4. Substitution.
5. $AB > CD$	5. Given.
6. $AE + CE > CD$	6. Substitution.
7. $CD = CE + DE$	7. Definition of segment addition.
8. $AE + CE > CE + DE$	8. Substitution.
9. $AE > DE$	9. Subtract CE from both sides.

17.

Given: $\angle b$ and $\angle c$ are complementary
Prove: $\angle a$ and $\angle d$ are complementary



Statement:	Reason:
1. $\angle a$ and $\angle b$ are vertical angles $\angle c$ and $\angle d$ are vertical angles	1. Definition of vertical angles.
2. $\angle a \cong \angle b$ $\angle c \cong \angle d$	2. Theorem 1.2.1: If two angles are vertical angles, then they are congruent.
3. $\angle b$ and $\angle c$ are complementary	3. Given.
4. $\angle b + \angle c = 90^o$	4. Definition of complementary angles.
5. $\angle a + \angle d = 90^o$	5. Substitution. (from step #2)
6. $\angle a$ and $\angle d$ are complementary	6. Definition of complementary angles.