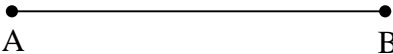


# CONSTRUCTIONS: Set A

Due Date: \_\_\_\_\_

1. To construct a line segment congruent to a given line segment.

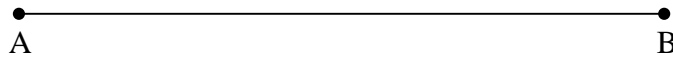
Given:  $\overline{AB}$ : 

Construct: segment  $CD$  such that  $\overline{CD} \cong \overline{AB}$

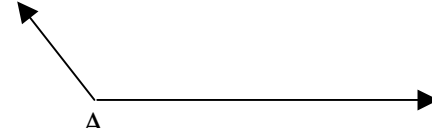
2. To construct the midpoint  $M$  of a given line segment  $AB$ .

Given: segment  $AB$  (see below)

Construct: midpoint  $M$  of  $\overline{AB}$



3. To construct an angle congruent to a given angle.

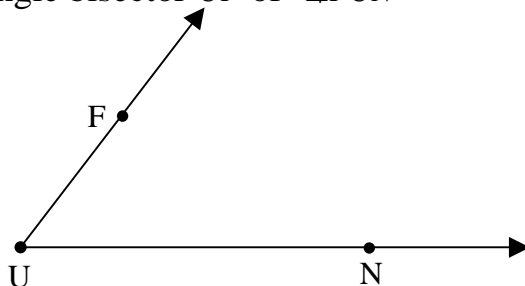
Given:  $\angle A$  

Construct:  $\angle B$  such that  $\angle B \cong \angle A$

4. To construct the angle bisector of a given angle.

Given:  $\angle FUN$  (see below)

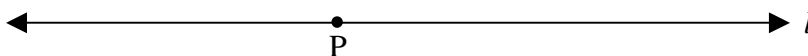
Construct: angle bisector  $\overline{UI}$  of  $\angle FUN$



5. To construct the line perpendicular to a given line at a specified point on the given line.

Given: line  $l$  and point  $P$  on  $l$  (see below)

Construct: line  $m$  through  $P$  such that  $m \perp l$

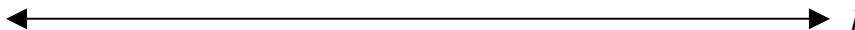


6. To construct the line that is perpendicular to a given line from a point not on the given line.

Given: line  $l$  and point  $P$  not on  $l$  (see below)

Construct: line  $n$  through  $P$  such that  $n \perp l$

$P$   
•



7. To construct the line parallel to a given line from a point not on that line.

Given: line  $l$  and a point  $P$  not on  $l$  (see below)

Construct: line  $m$  through  $P$  such that  $m \parallel l$

•  
 $P$



8. To construct  $\angle A$  such that  $m\angle A = 135^\circ$

9. To construct  $\angle B$  such that  $m\angle B = 22.5^\circ$

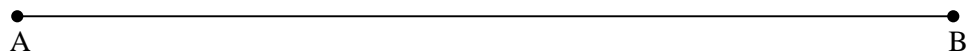
10. To construct  $\angle C$  such that  $m\angle C = 30^\circ$

11. To construct  $\angle D$  such that  $m\angle D = 75^\circ$

12. To divide a given segment into 8  $\cong$  parts.

Given:  $\overline{AB}$  (see below)

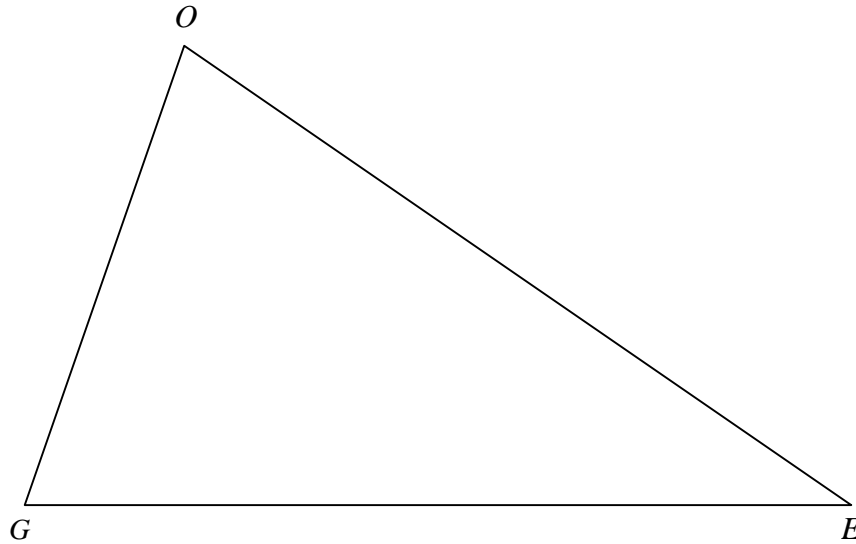
Construct: Subdivision of the segment into 8  $\cong$  parts.



13. To construct the three angle bisectors of a given triangle.

Given:  $\triangle GEO$  (see below)

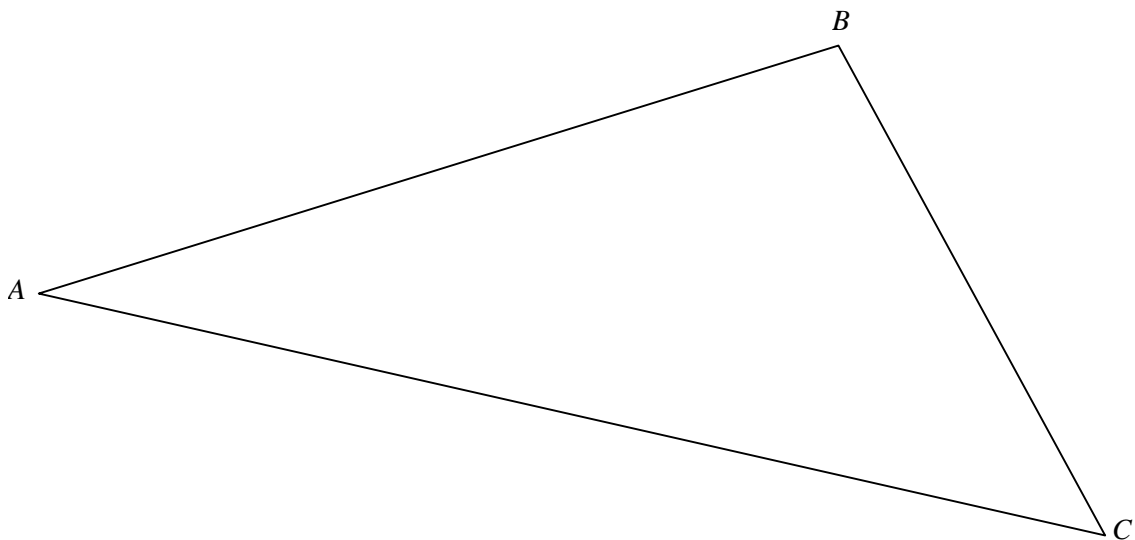
Construct: angle bisectors of  $\angle G, \angle E, \angle O$



14. To construct the three perpendicular bisectors of a given triangle.

Given:  $\triangle ABC$  (see below)

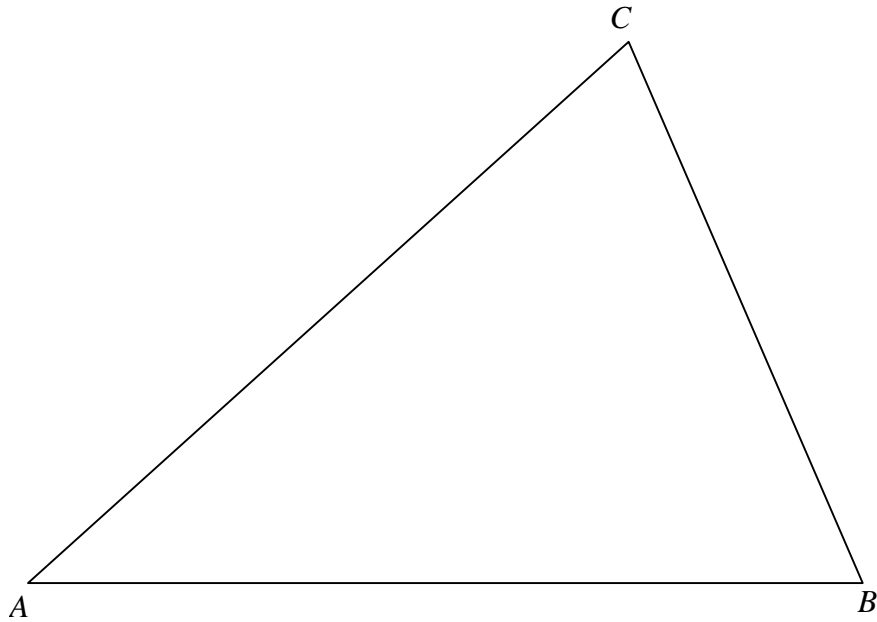
Construct: the  $\perp$  bisectors of sides  $\overline{AB}, \overline{BC}, \overline{AC}$



15. To construct the three medians of a given triangle.

Given:  $\triangle ABC$  (see below)

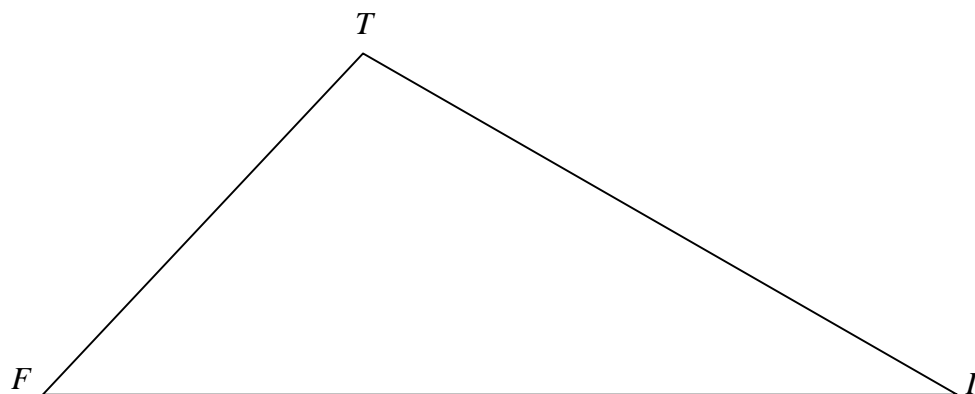
Construct: medians  $\overline{AM}$ ,  $\overline{BN}$ ,  $\overline{CT}$



16. To construct the three altitudes of a given triangle.

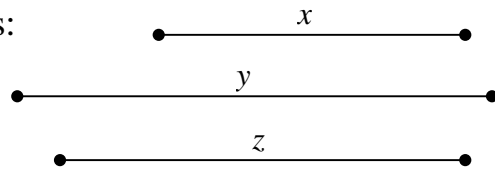
Given:  $\triangle FIT$  (see below)

Construct: altitudes  $\overline{FE}$ ,  $\overline{IN}$ ,  $\overline{TO}$



17. To construct a triangle given the three sides.

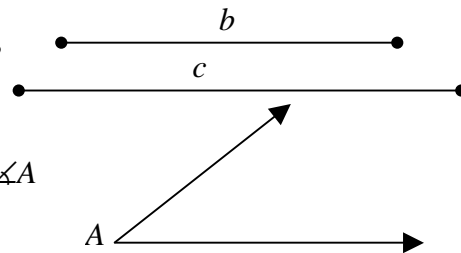
Given: 3 segments of varying lengths:



Construct:  $\triangle ACE$  of lengths  $x, y, z$

18. To construct a triangle given two sides and the included angle.

Given: 2 segments of given lengths

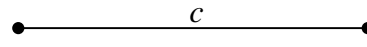


Included angle  $\cong$  to given  $\angle A$

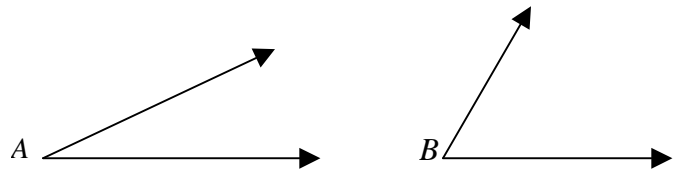
Construct:  $\triangle TIP$  with  $TI = b$ ,  $IP = c$  and  $\angle I \cong \angle A$

19. To construct a triangle given two angles and the included side.

Given: included side of given length



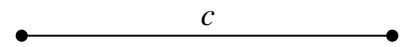
Two angles  $\cong \angle A, \angle B$



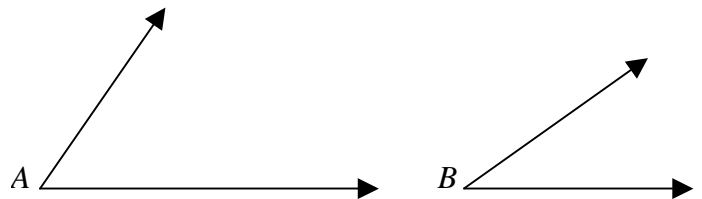
Construct  $\triangle KIT$  with  $\angle K \cong \angle A, \angle I \cong \angle B, KI = c$

20. To construct a triangle given two angles and the non-included side.

Given: non-included side of given length



Two angles  $\cong \angle A, \angle B$



Construct:  $\triangle OSH$  with  $\angle O \cong \angle A, \angle S \cong \angle B, SH = c$

21. To construct a right triangle given its hypotenuse and a leg.

Given: leg of length  $x$  and hypotenuse of length  $y$



Construct:  $\triangle TRI$  with right  $\sphericalangle R$ , leg  $RI = x$ , hypotenuse  $TI = y$

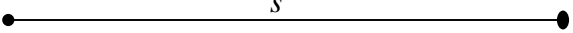
22. To construct an isosceles right triangle given its hypotenuse.

Given: hypotenuse of length  $x$

The diagram shows a single horizontal line segment labeled with the letter  $x$  above it. It has solid black dots at both ends.

Construct: Isosceles right  $\triangle ABC$  with hypotenuse  $AB = x$

23. To construct a regular hexagon given its side.

Given: length of each side is  $s$  

Construct: regular hexagon with length of each side equal to  $s$ .

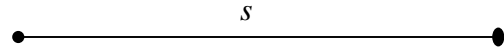
24. To construct a regular dodecagon given its side.

Given: length of each side is  $s$  

Construct: regular dodecagon with length of each side equal to  $s$ .

25. To construct a regular octagon.

Given: length of each side is  $s$



Construct: regular octagon with length of each side equal to  $s$ .