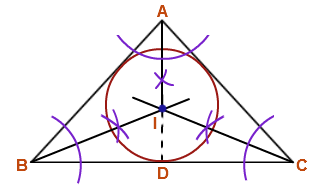
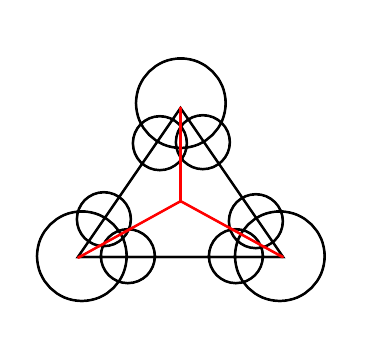
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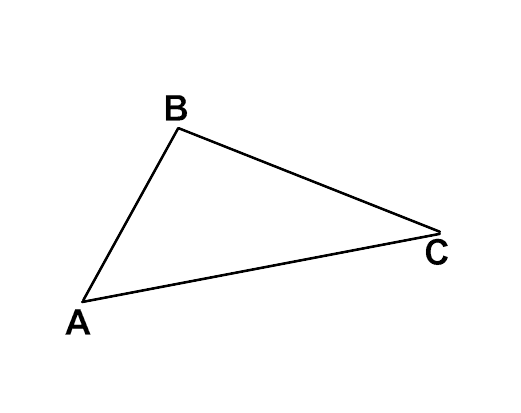
Geometry – Pd \_\_ Constructions

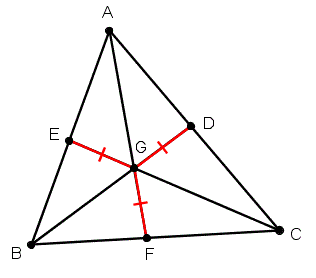
**Constructions Day 3**

Recall: An *\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_* is a line segment with one endpoint on any vertex of a triangle that extends to the opposite side of the triangle and bisects the angle. Since there are three vertices in every triangle, there are *\_\_\_\_\_\_\_\_\_\_\_* angle bisectors of a triangle. The point of concurrency of the angle bisectors of a triangle is known as the \_\_\_\_\_\_\_\_\_\_\_\_\_\_ of a triangle. To construct the incenter of a given triangle construct the angle bisector on \_\_\_\_\_\_\_\_

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ vertices. The incenter will always be located \_\_\_\_\_\_\_\_\_\_\_\_\_\_ a given triangle. The point of concurrency (the incenter) is the center of the circle that is inscribed within a given triangle.

**The Incenter**  Regents Common Core

1) Using a compass and a straightedge, construct the incenter of .

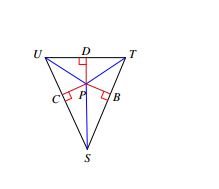
The Incenter:

- The incenter is formed by connecting the three angle bisectors

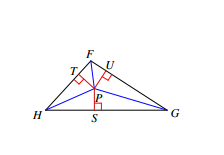
- The three angle bisectors of a triangle are concurrent at a point

equidistant from the ***sides*** of a triangle.

Directions: Using the above information, complete the following questions. Don’t forget justifications.

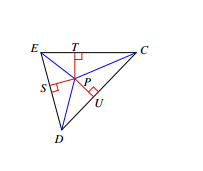
1) The incenter of is located at point P. If CP = 4x + 9 and PB = 6x – 11, find the value of x and

the length of CP and PD. Justify all calculations.



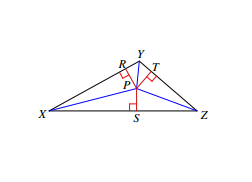
2) Point P is the incenter of . If m<TFP = 3x + 15, and m<UFP = 5x – 13, find the value of x.

Justify all calculations.



3) The incenter of is point P. If m<SDP = 7x + 5 and m<UDP = 9x – 5, find the value of x

and m<SDP. Justify all calculations.

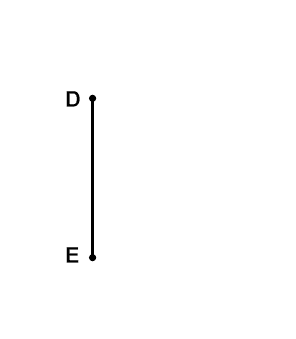


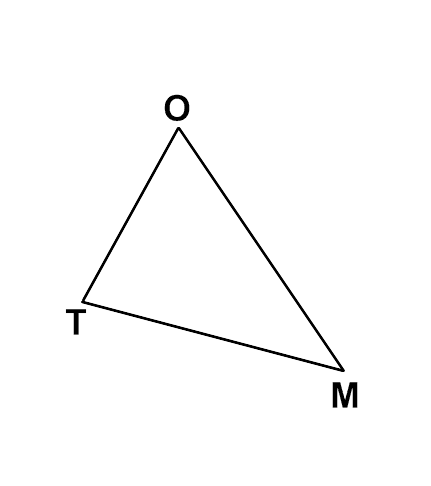
4) P is the incenter of . If m<SZP = 7x + 7, and m<SZT = 16x + 4, find the value of x and m<SZT.

Justify all calculations.

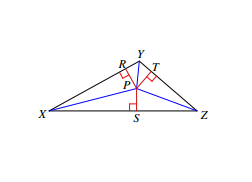
Name \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date \_\_\_\_\_\_\_\_\_\_\_\_

Geometry – Pd \_\_ Constructions

**Constructions Day 3 HW**



1) Construct the incenter of . 2) Construct an equilateral triangle to DE.

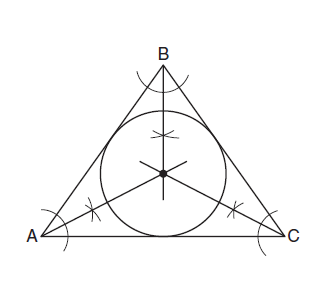


\_\_\_\_\_ 3) P is the incenter of . If m<RYP = 2x + 20, and m<TYP = x + 40,

what is the m<RYT?

(1) 20 (2) 40

(3) 60 (4) 120



\_\_\_\_\_ 4) Which geometric principle is used in the construction shown below?

(1) The intersection of the angle bisectors of a triangle is the

center of the inscribed circle.

(2) The intersection of the angle bisectors of a triangle is the

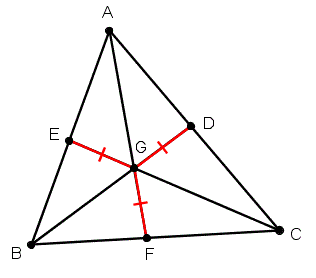
center of the circumscribed circle.

(3) The intersection of the perpendicular bisectors of the sides

of a triangle is the center of the inscribed circle.

(4) The intersection of the perpendicular bisectors of the sides

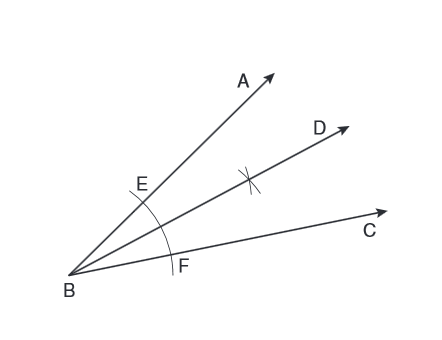
of a triangle is the center of the circumscribed circle.

\_\_\_\_\_ 5) The incenter of is located at point G. If EG = 3x + 14 and

DG = 5x – 8, what is the length of GF?

(1) 5 (2) 11

(3) 22 (4) 47

\_\_\_\_\_ 6) A straight edge and compass were used to create the following construction.

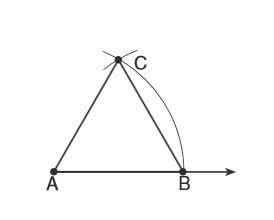
Which statement is false?

(1)

(2)

(3)

(4)



\_\_\_\_\_ 7) The diagram shows the construction of an equilateral triangle.

Which statement justifies this construction?

(1)

(2)

(3)

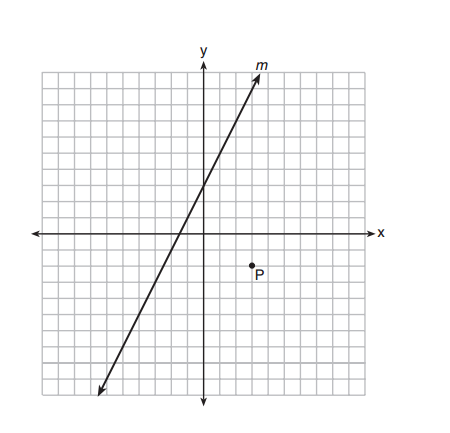
(4)

***Review Section!!***

\_\_\_\_\_ 8) What is the slope of a line perpendicular to the line whose equation is

(1) (2)

(3) 3 (4)



\_\_\_\_\_ 9) Line m and point P are shown in the graph. Which equation represents

the line passing through P and parallel to line m?

(1)

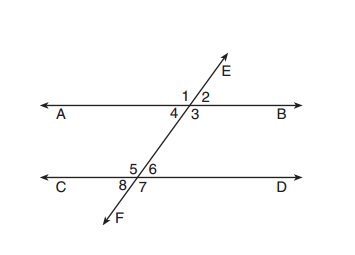
(2)

(3)

(4)

\_\_\_\_\_ 10) In , m<A = 3x + 1, m<B = 4x – 17, and m<C = 5x – 20. Which type of triangle is

(1) right (2) scalene

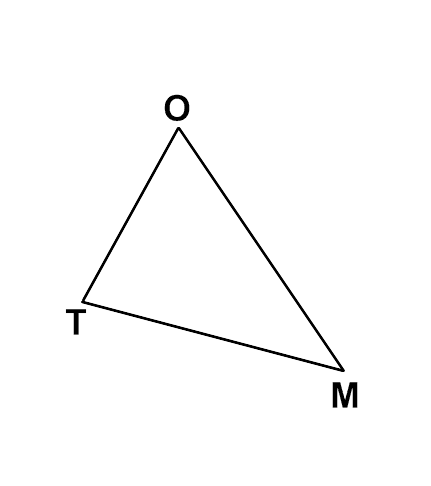
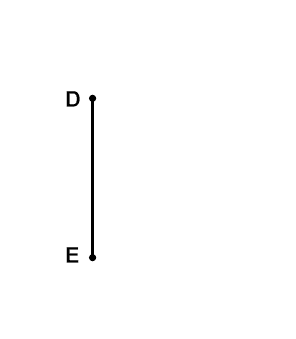
 (3) isosceles (4) equilateral

\_\_\_\_\_ 11) Transversal EF intersects AB and CD as shown. Which statement

could always be used to prove AB // CD?

(1) (2) and are supplementary

(3) (4) and are supplementary

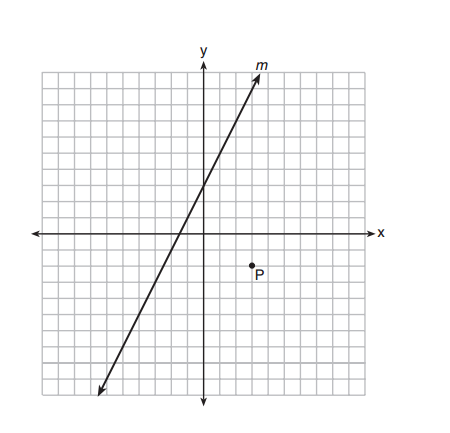
**Constructions Day 3 HW**

1) 2)

**3) (4) 4) (1) 5) (4) 6) (4) 7) (3)**

**8) (2) 9) (2) 10) (3) 11) (2)**

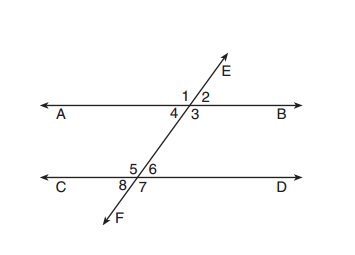
8) What is the slope of a line perpendicular to the line whose equation is



9) Line m and point P are shown in the graph. Which equation represents

the line passing through P and parallel to line m?

10) In , m<A = 3x + 1, m<B = 4x – 17, and m<C = 5x – 20. Which type of triangle is



11) Transversal EF intersects AB and CD as shown. Which statement

could always be used to prove AB // CD?

(1) (2) and are supplementary

(3) (4) and are supplementary