Honor's Geometry : Chapter 3 Review   Name: _Answer key_

For exercises 1-12, identify the statement as true or false.

1. In a geometric construction, you use a protractor and a ruler. false

2. The medians of a triangle are always the same length. False

3. If a point is equidistant from the endpoints of a segment, then it must be the midpoint of the segment. False
   could sit on ⊥ bisector ↗

4. The incenter of a triangle is the point of intersection of the three angle bisectors. True

5. The orthocenter of a triangle is the point of intersection of the three altitudes. True

6. Every point on an angle bisector in a triangle is equally distant from the sides of the angle. True

7. The circumcenter of a triangle is the center of the circle inscribes in the triangle. False

8. The incenter, the centroid, and the (orthocenter) are always inside the triangle. False

9. The Euler line contains the (incenter) the circumcenter and the orthocenter of the triangle. False

10. In a right triangle, the circumcenter is located at the midpoint of the side opposite the right angle. True

11. It is possible to construct an angle of 22.5 degrees using a compass and a straightedge. True

12. The shortest distance from a point to a line is the distance measured along the perpendicular from the point to the line. True

For exercises 13-20, identify the correct point of concurrency.

13. The _circumcenter_ of a triangle is equidistant from the three vertices of the triangle.

14. The point of concurrency of the altitudes of a triangle is called the _orthocenter_ .

15. The point of concurrency of the medians of a triangle is called the _centroid_ .

16. The _centroid_ of a triangle is also known as the center of gravity of a triangle.

17. The point of concurrency of the angle bisectors of a triangle is called the _incenter_ .

18. The _centroid_ of a triangle divides each median into two parts, such that the distance from this point to the vertex is twice the distance from this point to the midpoint of the opposite side.

19. The _incenter_ of a triangle is equidistant from the three sides of the triangle.

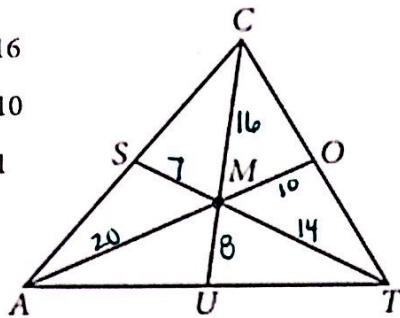20. The Euler line contains the centroid, circumcenter and the _orthocenter_ .

For exercises 21-22, find the missing lengths.

21. Point M is the centroid of the triangle below.
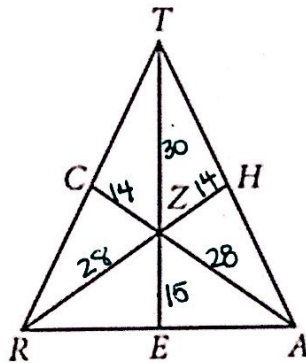
$CM = 16$

$MO = 10$

$TS = 21$

AM = __20__   TM = __14__

SM = __7__   UM = __8__

22. Point Z is the centroid of the triangle below.
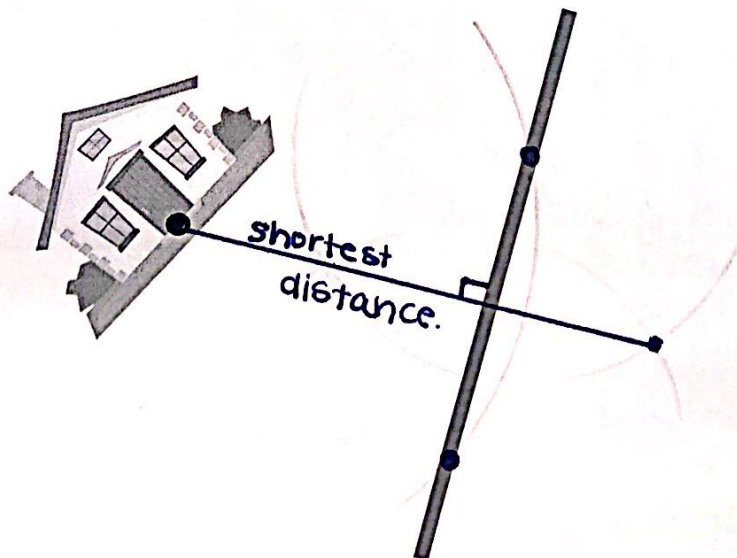
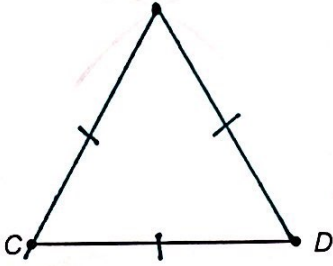$CZ = 14$

$TZ = 30$

$RZ = AZ$

RH: __42__   TE = __45__

For exercises 23, use your compass and ruler to construct a path that is the shortest distance from the door (point) to the road.
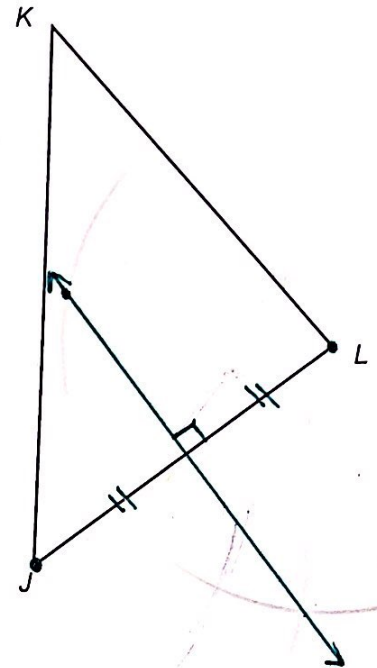
23.

shortest distance.

For exercises 24-32, perform the following constructions.

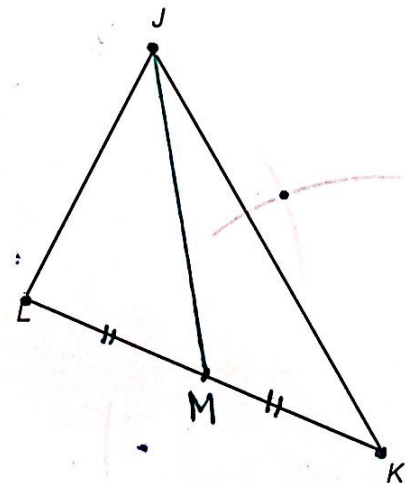24. Construct an equilateral triangle with side $\overline{CD}$.

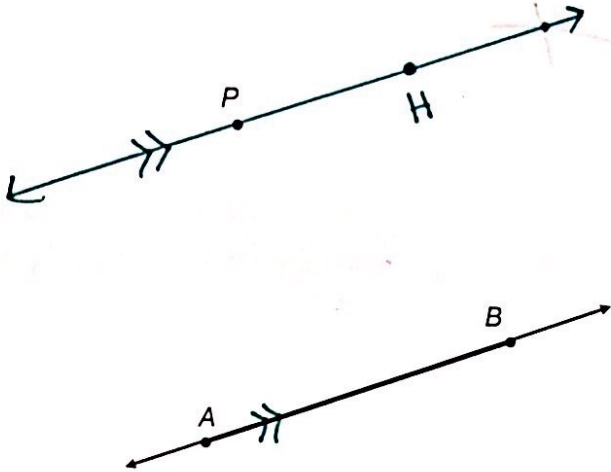25. Construct the perpendicular bisector of $\overline{LJ}$

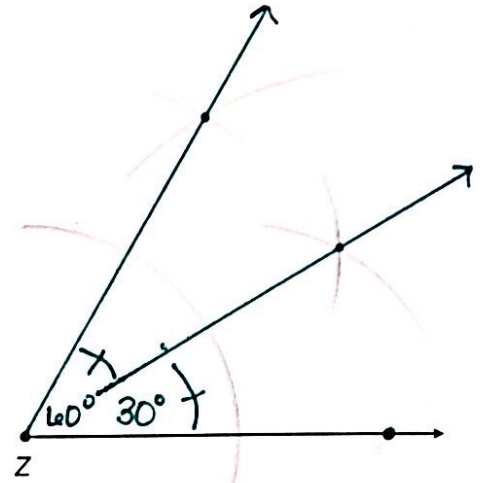26. Construct the altitude $\overline{DA}$ in $\triangle DEF$.
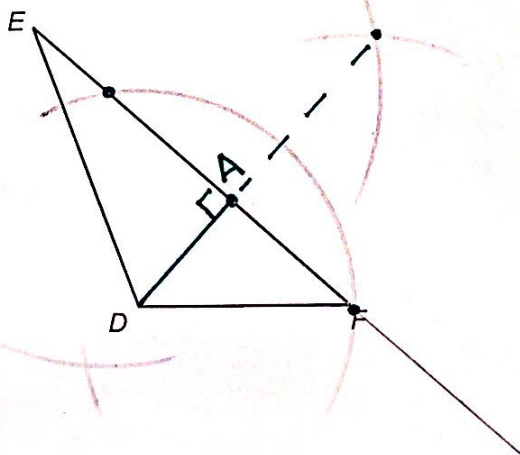
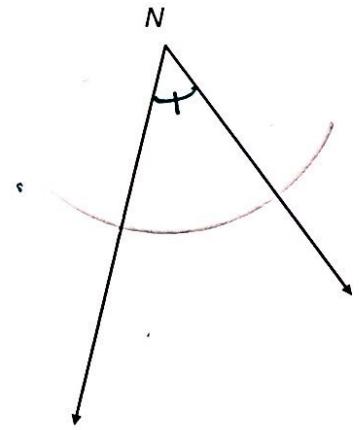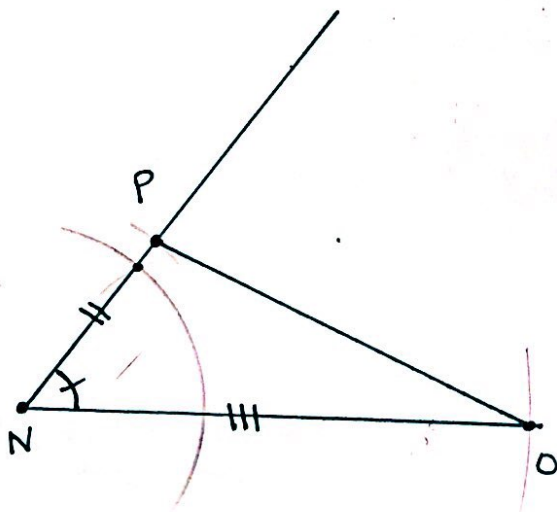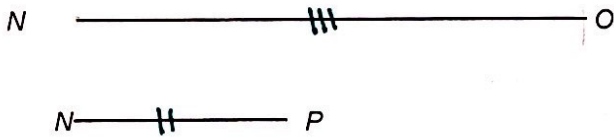27. Construct the median $\overline{JM}$ in $\triangle JKL$.

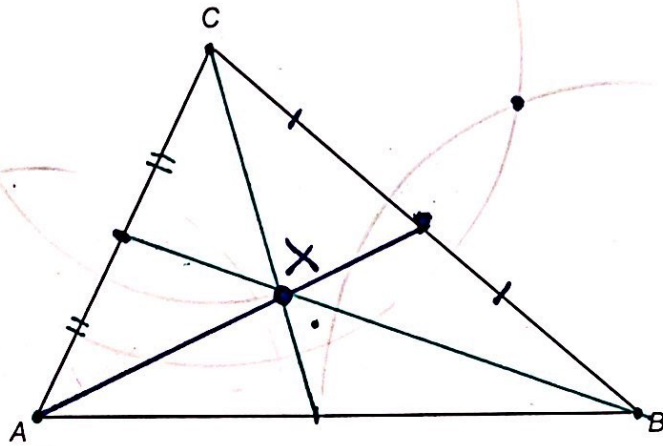28. Construct a line $\overleftrightarrow{PH}$ parallel to $\overleftrightarrow{AB}$ through point P.

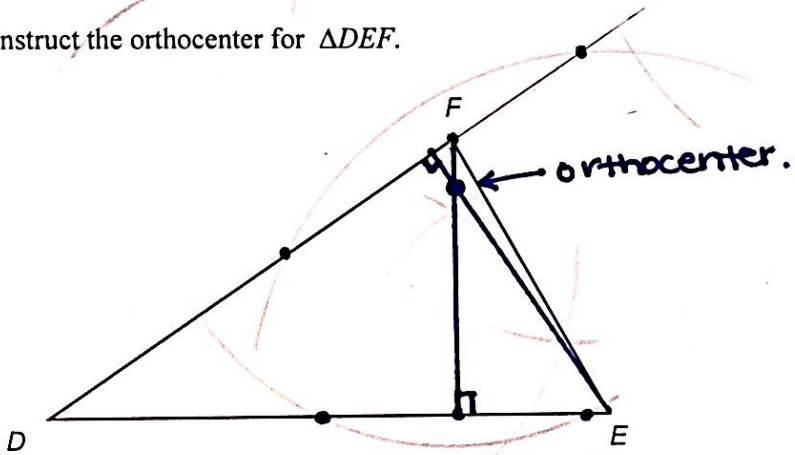29. Construct an angle of 30° at point Z.

30. Construct and label $\triangle NOP$ by duplicating the given segments and angle show below.
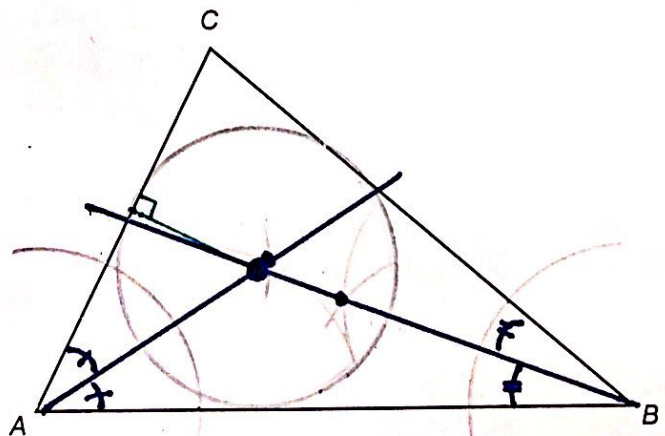
31. Construct the centroid X

32. Construct the orthocenter for ΔDEF.

orthocenter.

32. Construct the inscribed circle for ΔABC.

For the following below, match each geometric construction with one of the figures below.

Construction of a midsegment A

Construction of an altitude B

Construction of a centroid in a triangle I

Construction of an incenter H

Construction of an orthocenter in a triangle G

Construction of a circumcenter D

Construction of an equilateral triangle J

Construction of an angle bisector C