

Geometry Semester I Review

Name Key

BRINGING IT ALL TOGETHER

51

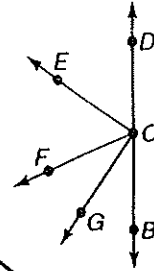
In the figure, \overrightarrow{CB} and \overrightarrow{CD} are opposite rays, \overrightarrow{CE} bisects $\angle DCF$, and \overrightarrow{CG} bisects $\angle FCB$.

- ① If $m\angle DCE = 4x + 15$ and $m\angle ECF = 6x - 5$, find $m\angle DCE$.

55°

- ② If $m\angle FCG = 9x + 3$ and $m\angle GCB = 13x - 9$, find $m\angle GCB$.

30°



- ③ The diagram shows a sign used to warn drivers of a school zone or crossing. Measure and classify each numbered angle.



a) $m\angle 1 = \frac{90^\circ}{\text{Rt}}$

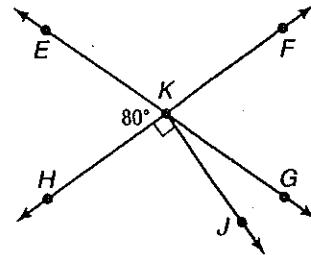
b) $m\angle 2 = \frac{130^\circ}{\text{Obtuse}}$

1-5

For Exercises 4-7 use the figure at the right.

- ④ Name two acute vertical angles.

$\angle EKH$
 $\angle FKG$



- ⑤ Name a linear pair.

Many

- ⑥ Name two acute adjacent angles.

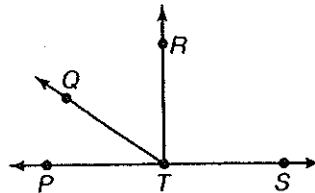
$\angle JKB + \angle FKB$

- ⑦ Name an angle supplementary to $\angle FKG$.

$\angle GKH$ or $\angle EKF$

- ⑧ Find x so that $\overline{TR} \perp \overline{TS}$ if $m\angle RTS = 8x + 18$.

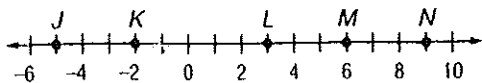
$x = 9$



- ⑨ Find $m\angle PTQ$ if $\overline{TR} \perp \overline{TS}$ and $m\angle PTQ = m\angle RTQ - 18$.

36°

10. Use the number line to find each measure.



a) $LN = 6$

b) $JL = 8$

11. Find the distance between each pair of points.

a) $F(-3, -2), G(1, 1)$

b) $Y(-6, 0), P(2, 6)$

5

10

12. Find the coordinates of the midpoint of a segment having the given endpoints.

a) $A(3, 1), B(5, 3)$

b) $T(-4, 9), U(7, 5)$

$(4, 2)$

$(\frac{3}{2}, 7)$

1-4

Angle Measure

In 13-16, refer to the figure at the right.

13. Name a right angle.

$\angle EBG$

14. Name an obtuse angle.

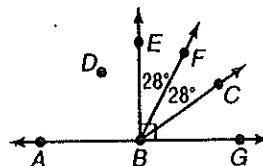
$\angle ABF, \angle ABC$

15. Name a point in the interior of $\angle EBC$.

F

16. What is the angle bisector of $\angle EBC$?

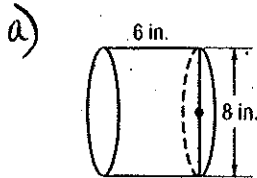
\overline{BF}



1-7

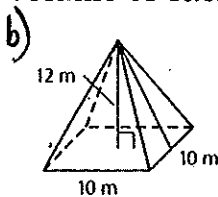
Three-Dimensional Figures

17. Find the surface area and volume of each solid.



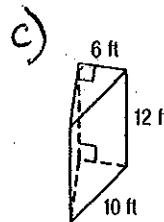
$SA = 80\pi \approx 251.$

$V = 96\pi \approx 301$



$SA = 360m^2$

$V = 400m^3$



$SA = 336ft^2$

$V = 288ft^3$

16

2-1

18. Make a conjecture about the next number in the pattern.

a) -6, -3, 0, 3, 6

9

b) 4, -2, 1, $-\frac{1}{2}$, $\frac{1}{4}$

$-\frac{1}{8}$

3-1

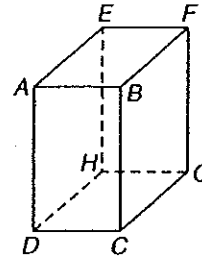
19. Refer to the figure at the right.

a) Name all planes that are parallel to plane ABC.

Plane EFGH

b) Name all segments that are parallel to \overline{FG} .

\overline{BC} , \overline{AD} , \overline{EH}



3-2

20. In the figure, $m\angle 5 = 100$. Find the measure of each angle.

a) $\angle 1$ 100

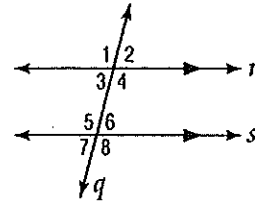
b) $\angle 3$ 80

c) $\angle 4$ 100

d) $\angle 7$ 80

e) $\angle 6$ 80

f) $\angle 2$ 80



3-3

21. Determine the slope of the line that contains the given points.

a) $F(-6, 2), M(7, 9)$

$\frac{7}{9}$

b) $Z(1, 10), L(5, -3)$

$-\frac{13}{4}$

22.

Determine whether \overline{EF} and \overline{PQ} are parallel, perpendicular, or neither. $E(0, 4), F(2, 3), P(-3, 5), Q(1, 3)$

$-\frac{1}{2}$

Parallel

$-\frac{1}{2}$

3-4

Equations of lines

23.

Write an equation in slope-intercept form of the line with slope -2 that contains $(2, 5)$.

$y = -2x + 9$

14
3

24. Write an equation in slope-intercept form of the line that contains $(-4, -2)$ and $(-1, 7)$.

$$y = 3x + 10$$

3-5

Proving Lines Parallel

25. Given the following information, determine which lines, if any, are parallel. State the postulate or theorem that justifies your answer.

a) $\angle 1 \cong \angle 15$

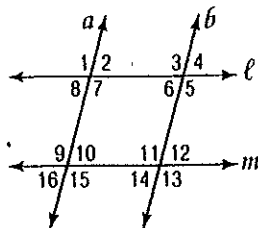
$a \parallel m$ AEA

b) $\angle 9 \cong \angle 11$

$a \parallel b$ Corr \angle

c) $\angle 2 \cong \angle 6$

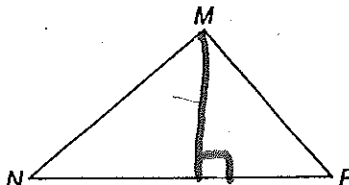
$a \parallel b$ AIA



3-6

Perpendiculars and Distance

26. Draw the segment that represents the distance from m to \overline{NP} .



4-1

27. Find x and the measure of each side of the triangle.

$\triangle ABC$ is equilateral with $AB = 3x - 15$, $BC = 2x - 4$, and $CA = x + 7$.

$x = 11$

12

28. $\triangle DEF$ is isosceles, $\angle D$ is the vertex angle, $DE = x + 5$, $DF = 5x - 7$ and $EF = 2x - 1$.

$x = 3$

$DF = 8$
 $DE = 8$
 $EF = 5$

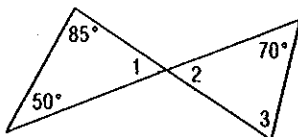
4-2

Angles of Triangles

29. Find the measure of each angle.

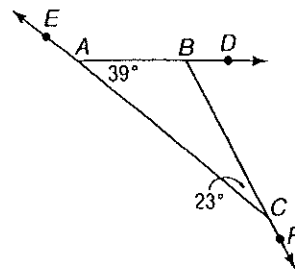
a) $m\angle 1$ 45

b) $m\angle 3$ 65



9

30. Find the measure of each angle without using a protractor.



- a) $\angle DBC$ 62 b) $\angle ABC$ 118
 c) $\angle ACF$ 157 d) $\angle EAB$ 141

4-3

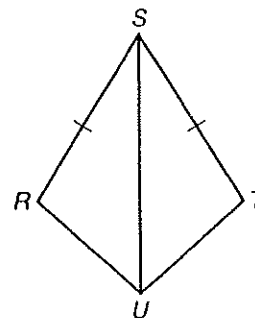
31. Complete each congruence statement if $\triangle TSR \cong \triangle WVU$.

- a) $\angle R \cong \angle U$ b) $\overline{TR} \cong \overline{WV}$ c) $\angle S \cong \angle V$
 d) $\overline{RT} \cong \overline{UV}$ e) $\overline{SR} \cong \overline{VU}$ f) $\overline{TS} \cong \overline{WV}$

4-4

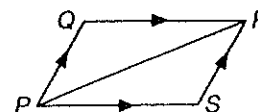
32. In quadrilateral $RSTU$, $\overline{RS} \cong \overline{TS}$ and \overline{SU} bisects $\angle RST$. Name the postulate that could be used to prove $\triangle RSU \cong \triangle TSU$.

SAS



33. In quadrilateral $PQRS$, $\overline{QR} \parallel \overline{SP}$ and $\overline{PQ} \parallel \overline{RS}$. Name the postulate that could be used to prove $\triangle PQR \cong \triangle RSP$.

ASA



4-6

Isosceles Triangle

Refer to the figure for questions 34-38.

34. What kind of triangle is $\triangle QRS$?

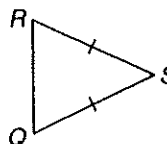
Isosceles

35. Name the legs of $\triangle QRS$.

\overline{RS} & \overline{QS}

36. Name the base of $\triangle QRS$.

\overline{RQ}



37. Name the vertex angle of $\triangle QRS$.

$\angle S$

38. Name the base angles of $\triangle QRS$.

$\angle R$ and $\angle Q$

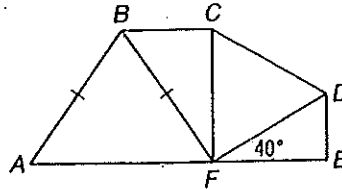
39. $\triangle ABF$ is equilateral, and $\overline{AE} \perp \overline{CF}$. Find each measure.

a) $m\angle CFD$ 50

b) $m\angle BFC$ 30

c) $m\angle ABF$ 60

d) $m\angle A$ 60



5-4

The Triangle Inequality

40. Determine whether the given measures can be the lengths of a triangle. Write *yes* or *no*.

a) 5, 6, 7

yes

b) 6, 8, 10

yes

6-1

Angles of Polygons

41. Give the measure of an interior angle and the measure of an exterior angle of each polygon.

a) equilateral triangle

I: 60 E: 120

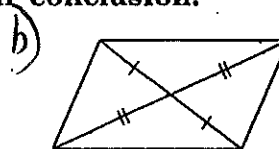
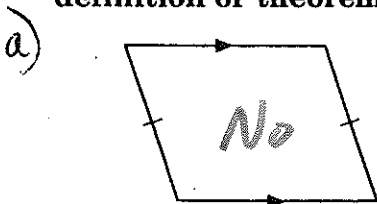
b) regular hexagon

120 60

c) Find the sum of the measures of the interior angles of a convex 20-gon.

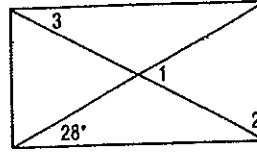
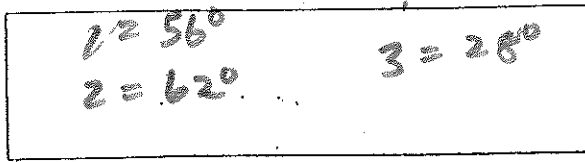
3240

42. Determine whether there is enough given information to know that each figure is a parallelogram. If so, state the definition or theorem that justifies your conclusion.

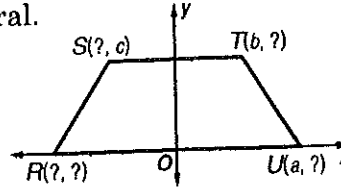
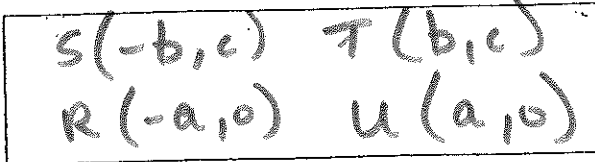


Rectangles

43. Find $m\angle 1$, $m\angle 2$, and $m\angle 3$ in the rectangle shown.

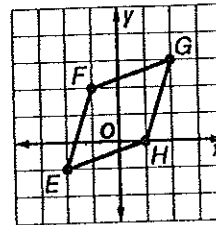
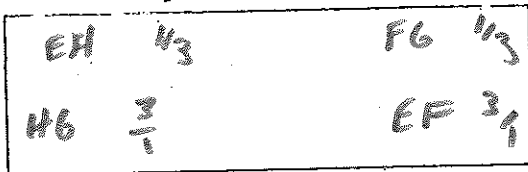


44. Find the missing coordinates in the figure. Then write the coordinates of the four vertices of the quadrilateral.



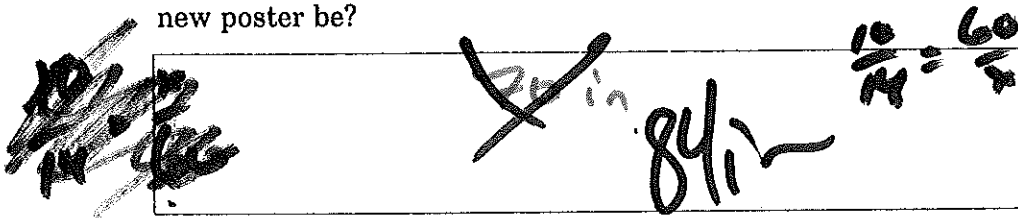
Refer to quadrilateral $EFGH$.

45. Find the slope of each side.



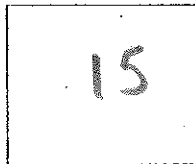
Proportions

46. **ADVERTISEMENT** A poster measures 10 inches by 14 inches. If it is enlarged to have a width of 60 inches, how tall will the new poster be?

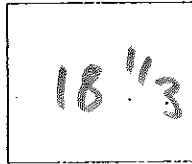


47. Solve each proportion.

a) $\frac{3}{8} = \frac{x}{40}$



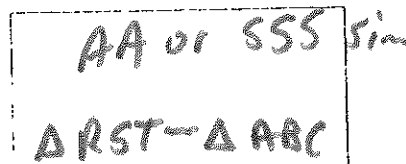
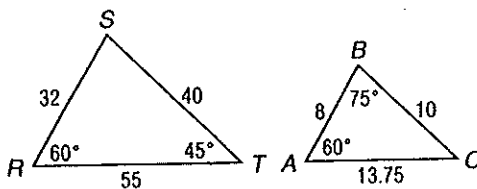
b) $\frac{9}{11} = \frac{15}{x}$



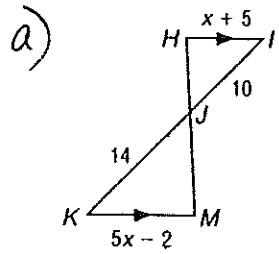
c) $\frac{x+2}{5} = \frac{4}{3}$



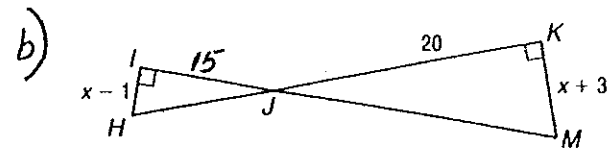
48. Determine whether each pair of figures is similar. If so, write the appropriate similarity statement.



49) If $\triangle HIJ \sim \triangle MKJ$, find x and the scale factor of $\triangle HIJ$ to $\triangle MKJ$.



$x = 6\frac{1}{2}, \frac{5}{7}$



$x = 13, \frac{3}{4}$

7-3

Similar Triangles

50) SHADOWS A tree casts a 60 foot shadow. At the same time, a 6-foot tall man casts a shadow that is 2 feet long. How tall is the tree?

$x = 180ft$