HOMEWORK...

Questions?

Page 99: 1, 3, 4, 5, 10, 11, 16b

HISTORY on Buckyball Do A, B and C

$$\boxed{Sum = 180°(n-2)}$$

3. The sum of the measures of the interior angles of an unknown polygon is 3060°. Determine the number of sides that the polygon has.

*SAMDEB
rearrange

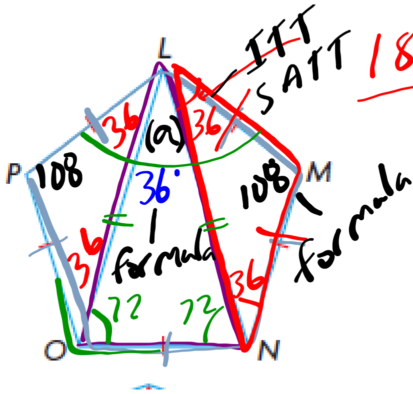
$$\frac{3060}{180} = \frac{\cancel{180}}{\cancel{180}}(n-2)$$

$$17 + 2 = n - \cancel{2} + \cancel{2}$$

$$19 = n$$

10. *LMNOP* is a regular pentagon.
   a) Determine the measure of $\angle OLN$. 36°
   b) What kind of triangle is $\triangle LON$? Explain how you know.

   Isosceles



$$\frac{180-108}{2}$$

$$\frac{72}{2}$$

36

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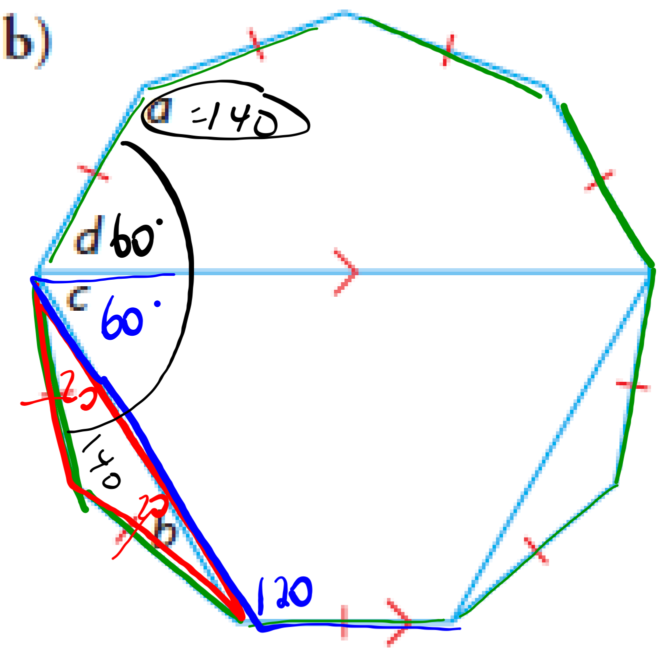
180(5-2)
                540
Ans/5
                108
```

16b)

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180(9-2)
                1260
Ans/9
                 140
```

$$b = \frac{180-140}{2}$$

$$b = 20^\circ$$

History | Connection

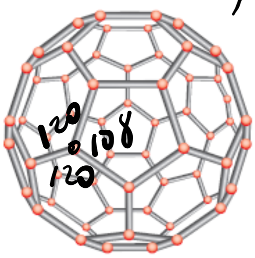
Buckyballs—Polygons in 3-D

Richard Buckminster "Bucky" Fuller (1895–1983) was an American architect and inventor who spent time working in Canada. He developed the geodesic dome and built a famous example, now called the Montréal Biosphere, for Expo 1967. A spin-off from Fuller's dome design was the buckyball, which became the official design for the soccer ball used in the 1970 World Cup.

In 1985, scientists discovered carbon molecules that resembled Fuller's geodesic sphere. These molecules were named fullerenes, after Fuller.


The Montréal Biosphere and its architect


FIFA soccer ball, 1970



Carbon molecule, C_{60}

A. Identify the polygons that were used to create the buckyball.
B. Predict the sum of the three interior angles at each vertex of the buckyball. Check your prediction.
C. Explain why the value you found in part B makes sense.

a) hexagons
pentagons
Regular

b) 348

c) 3D

WARM-UP...

3) Think of a number
With the number in mind, do the following operations:
- ➪ double it
- ➪ add 4
- ➪ half it
- ➪ subtract 2

What is your answer?

Inductively: 11
22
26
13
11

Deductively: x

$$\frac{2x+4}{2}$$

$$x \cancel{+2-2}$$

UNIT TEST... Chp. 1 - Inductive/Deductive

Tuesday Chp. 2 - Angle Properties

REVIEW / PRACTICE TIME... * Proof p.106 # 7, 9, *11

Quiz ← Revisit

CHAPTER 1...

- p. 34: Mid Chp Review (FAQ)
- p. 35: Mid Chp Practice Ques.
- p. 59: Chp Review (FAQ)
- p. 61: Chp Practice (omit 1.7)
- p. 58: Practice Test

CHAPTER 2...

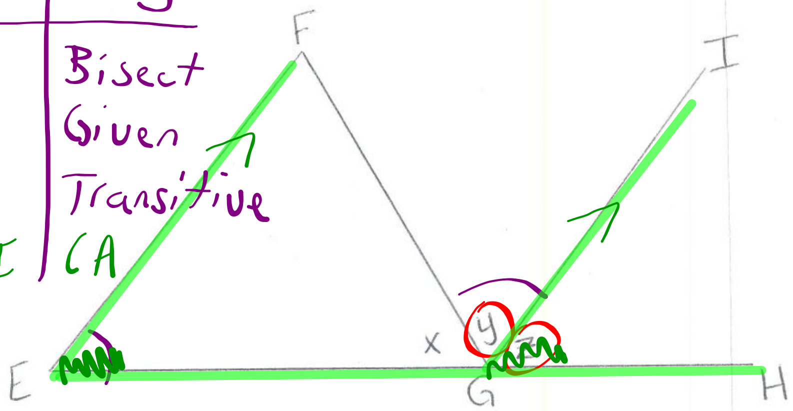
- p. 84: Mid Chp Review (FAQ)
- p. 85: Mid Chp Practice Ques.
- p. 105: Chp Review (FAQ)
- p. 106: Chp Practice
- p. 104: Practice Test

In $\triangle EFG$, GI bisects $\angle FGH$

If $\angle E = \angle y$, then prove that $EF \parallel GI$

2

S	J
$\angle y = \angle z$	Bisect
$\angle E = \angle y$	Given
$\angle E = \angle z$	Transitive
$\therefore EF \parallel GI$	CA

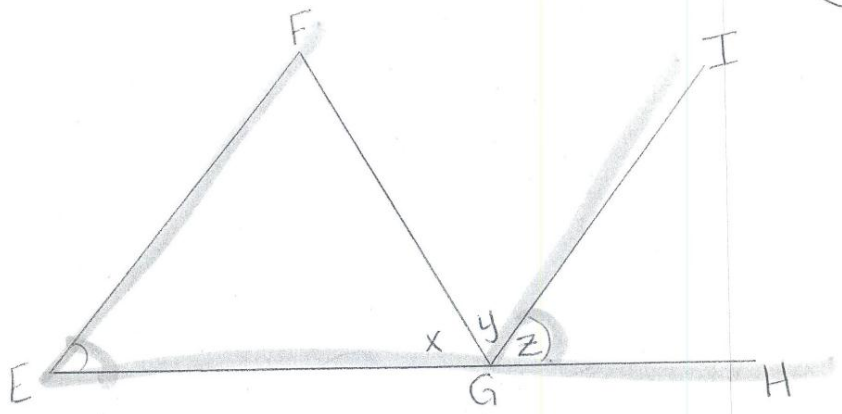


Statements	Justifications

In $\triangle EFG$, GI bisects $\angle FGH$

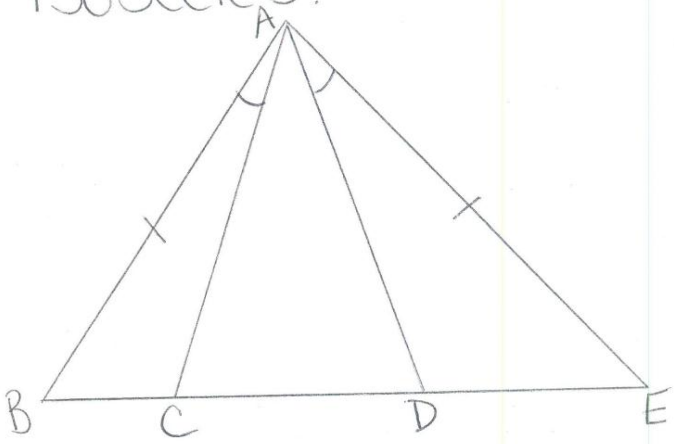
If $\angle E = \angle y$, then prove that $EF \parallel GI$

2



Statements	Justifications
$\angle y = \angle z$	given GI bisects $\angle FGH$
$\angle y = \angle E$	given
$\angle E = \angle z$	transitive
$EF \parallel GI$	corresponding angles are equal.

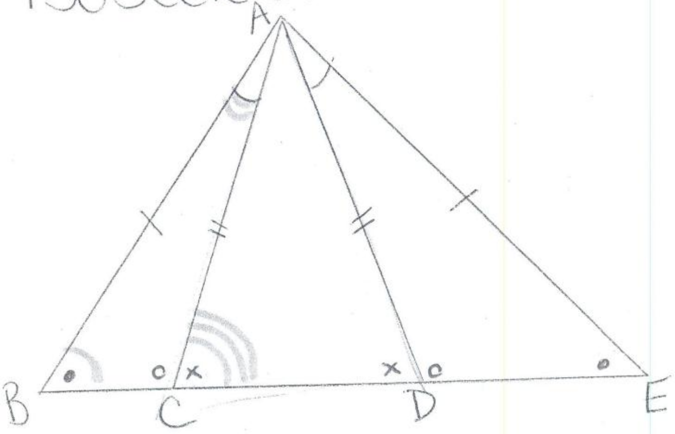
Prove that $\triangle ACD$ is isosceles.



Statements	Justifications

3

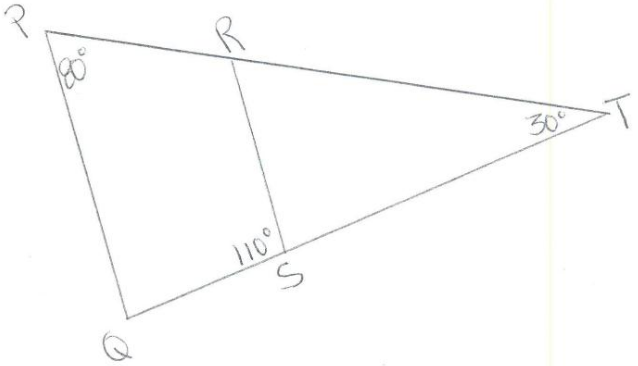
Prove that $\triangle ACD$ is isosceles.



Statements	Justifications
$BA = EA$	given
$\angle BAC = \angle EAD$	given
$\angle ABC = \angle AED$	isosceles triangle theorem.
$\angle BCA = 180 - \angle BAC - \angle ABC$	sum of angles in triangle
$\angle BCA = 180 - \angle EAD - \angle AED$	substitution
$\angle EDA = 180 - \angle EAD - \angle AED$	sum of angles in triangle
$\angle BCA = \angle EDA$	transitive
$\angle ACD = 180 - \angle BCA$	Supplementary
$\angle ADC = 180 - \angle EDA$	Supplementary
$\angle ADC = 180 - \angle BCA$	substitution.
$\angle ACD = \angle ADC$	transitive
$\triangle ACD$ is isosceles	base angles are equal.

(4)

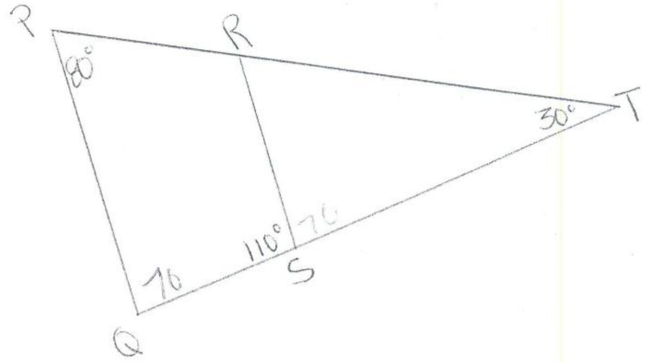
Prove PQ // RS



Statements	Justifications

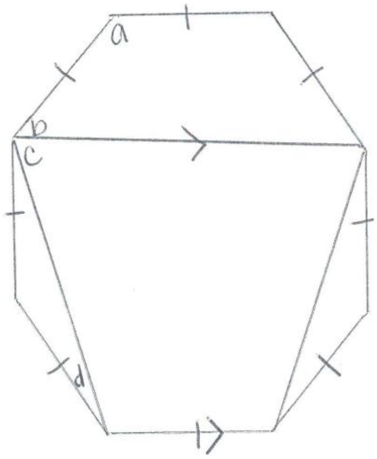
(4)

Prove PQ // RS



Statements	Justifications
$\angle Q + \angle P + \angle T = 180°$	Sum of interior angles of a $\triangle$
$\angle Q + 80° + 30° = 180°$	Substitution
$\angle Q = 70°$	Subtraction.
$\angle QSR + \angle RST = 180°$	Supplementary angles
$\angle RST + 110° = 180°$	Substitution
$\angle RST = 70°$	Subtraction
PQ // RS	Corresponding angles ($\angle Q$ and $\angle RST$ are equal)

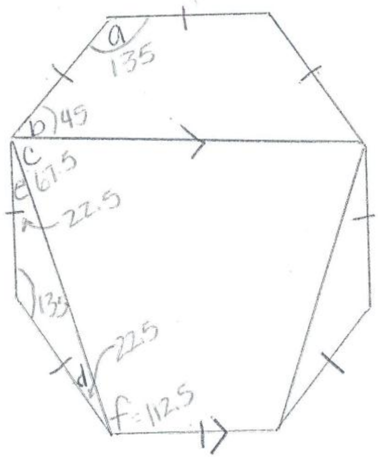
Determine the values of a, b, c, and d. 5



Show all your work!

a= b= c= d=

Determine the values of a, b, c, and d. (5)



Show all your work!

→ $S(n) = 180(n-2)$
$S(8) = 180(8-2)$
$= 180(6)$
$= 1080$

→ measure of each angle of the octagon ∴ ∠a
$\angle a = \frac{1080}{8} = 135°$

→ $d = e$ (isosceles triangle)
$135 + 2e = 180$
$e = 22.5$
$d = 22.5$

→ $180 - f = c$ (co-interior)
$180 - 112.5 = c$
$c = 67.5$

$f = 135 - d$
$f = 112.5$

→ $135 - e - c = b$
$135 - 22.5 - 67.5 = b$
$b = 45°$

$\boxed{a = 135° \quad b = 45° \quad c = 67.5° \quad d = 22.5°}$