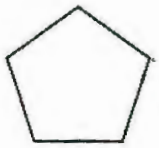
Name Answers Date

6.1 – Angles in Polygons

Find the sum of the angle measure of each polygon.

1) 

$6 \times 180 = 1080°$

2) 

$3 \times 180 = 540°$

3) 

$5 \times 180 = 900°$

4) 18-gon

$16 \times 180 = 2880°$

5) 102-gon

$100 \times 180 = 18{,}000°$

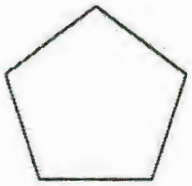
6) 90-gon

$88 \times 180 = 15{,}840°$

Find the measure of one angle in each regular polygon. Round to the nearest tenth if necessary.

7) 

$\frac{(8-2)180}{8} = 135°$

8) 

$\frac{(5-2)180}{5} = 108°$

9) 

$\frac{(7-2)180}{7} \approx 128.6°$

10) Regular 15-gon

$\frac{(15-2)180}{15} = 156°$

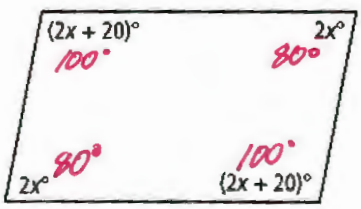
11) Regular 360-gon

$\frac{(360-2)180}{360} = 179°$

12) Regular 144-gon

$\frac{(144-2)180}{144} = 177.5°$

Find the missing angle measures. Show all algebraic work.

13) 

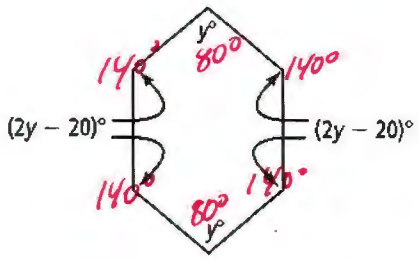
$2x + 2x + (2x+20) + (2x+20) = 360$

$8x + 40 = 360$

$8x = 320$

$x = 40°$

14)



$4(2y-20)+2y=720$

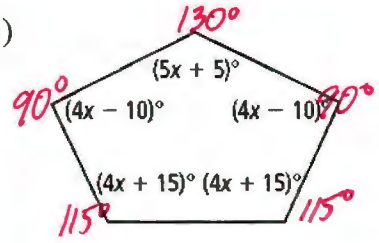
$8y-80+2y=720$

$10y-80=720$

$10y=800$

$y=80$

15)



$5x+5+2(4x-10)+2(4x+15)=540°$

$5x+5+8x-20+8x+30=540°$

$21x+15=540$

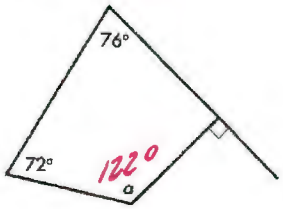
$21x=525$

$x=25$

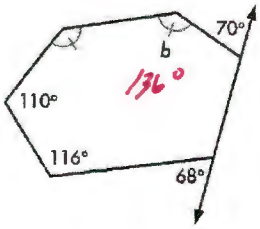
Thanks for the white out Barnett!

Find the missing variables.

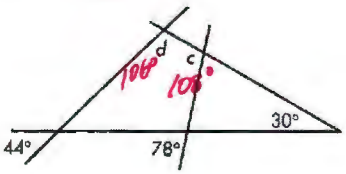
16) a = -?- 122°



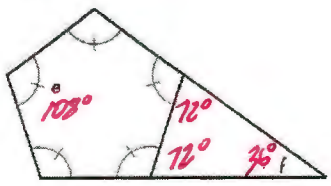
17) b = -?- 136°



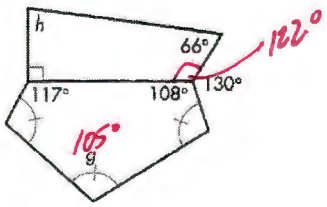
18) c = -?- 108°
d = -?- 106°



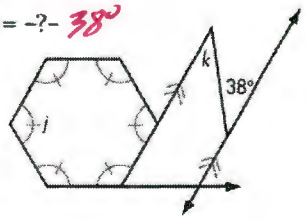
19) e = -?- 108°
f = -?- 36°

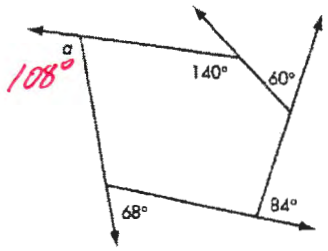


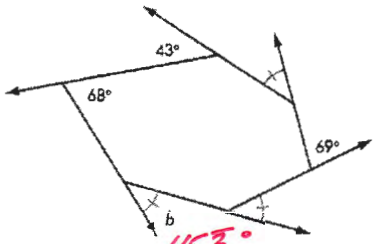
20) g = -?- 105°
h = -?- 82°

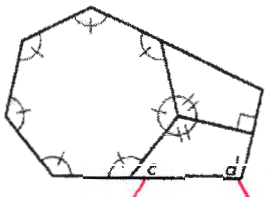


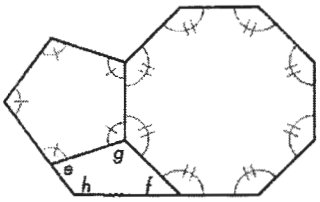
21) j = -?- 120°
k = -?- 38°



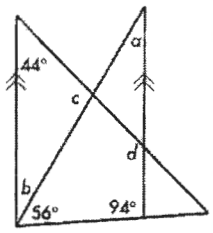
22) 

23) 

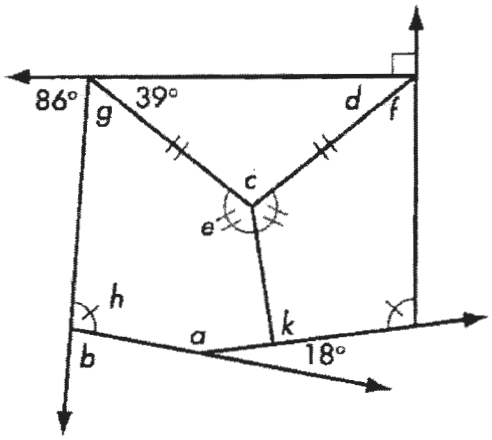
24) 

25) 

m∠e = 72°
m∠f = 45°
m∠g = 117°
m∠h = 126°

26) 

m∠a = 30°
m∠b = 30°
m∠c = 106°
m∠d = 136°

27) 

a = 162° d = 39° g = 55°

b = 83° e = 129° h = 97°

c = 102° f = 51° k = 83°

28) What is the sum of the measures of a set of exterior angles of a decagon?

360°

29) Four exterior angles of a pentagon measure 63°, 67°, 58°, and 64°. What is the measure of the remaining exterior angle?

360 − (63 + 67 + 58 + 64) =

= 108°

30) What is the measure of each exterior angle of a regular hexagon?

$\frac{360}{6} = 60°$

31) How many sides does a regular polygon have if each exterior angle measures 24°?

$24 = \frac{360}{n}$

$n = 15$ sides

32) What is the sum of the measures of the interior angles of a dodecagon?

$(12-2)180$

$= 1800°$

33) How many sides does a polygon have if the sum of its interior angle measures is 7380°?

$S = (n-2)180$

$7380 = (n-2)180$

$41 = n-2$

43 sides $= n$

34) What is the measure of each interior angle of a regular octagon?

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

$= \frac{(8-2)180}{8}$

$= 135°$

35) How many sides does a regular polygon have if each of its interior angles measures 165°?

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

$165 = \frac{(n-2)180}{n}$

$165n = (n-2)180$

$165n = 180n - 360$

$-15n = -360$

$n = 24$ sides