Secondary Math 2H Name_____

9.1 Degrees and Radians

Date_____ Period____

Convert each degree measure into radians.

1) $\frac{255°}{1}\left(\frac{\pi}{180°}\right)$ $\frac{17\pi}{12}$

reduce fraction

2) $-225°\left(\frac{\pi}{180°}\right)$ $-\frac{5\pi}{4}$

Convert each radian measure into degrees.

3) $-\frac{17\pi}{6}\cdot\frac{180°}{\pi}$ $-510°$

4) $\frac{5\pi}{3}\cdot\frac{180°}{\pi}$ $300°$

Convert each degree measure into radians and each radian measure into degrees.

5) $\frac{-50°}{1}\cdot\frac{\pi}{180°}$ $-\frac{5\pi}{18}$

6) $\frac{19\pi}{4}\cdot\frac{180°}{\pi}$ $855°$

7) $\frac{390°}{1}\cdot\frac{\pi}{180°}$ $\frac{39\pi}{18}$

8) $-\frac{7\pi}{6}\cdot\frac{180°}{\pi}$ $-210°$

State the quadrant in which the terminal side of each angle lies.

9) $\frac{5\pi}{4}$

1π $1\frac{1}{4}\pi$ III

10) $\frac{5\pi}{9}$

II

$\frac{5}{9}$ more than $\frac{1}{2}$

11) $-\frac{\pi}{3}$

IV

12) $-120°$

$-180°$ -90 III

13) $260°$

90 $180°$ $270°$ III

14) $560°$

$-360°$ 200 III

90° $180°$ $270°$ 0°

15) $-\frac{11\pi}{6}$

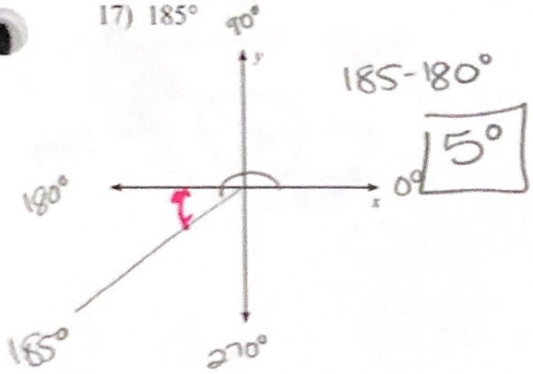
$-1\frac{5}{6}\pi$ I

16) $\frac{11\pi}{3}$

$3\frac{2}{3}\pi$ 3π 1π 2π IV

Draw an angle with the given measure in standard position and find the reference angle.

17) 185°

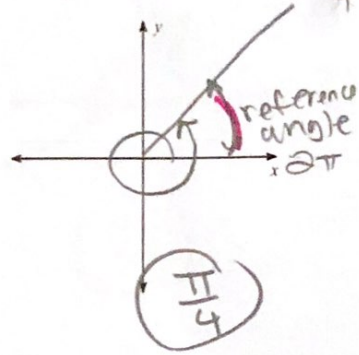


185-180°

$\boxed{5°}$

18) $\frac{9\pi}{4}$

$2\frac{1}{4}\pi$

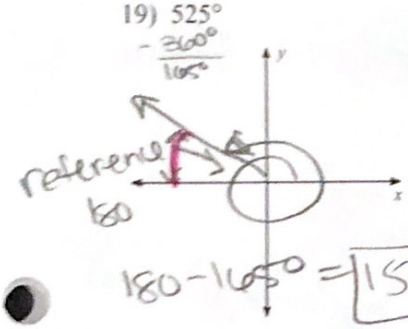


$\frac{9\pi}{4} - \frac{8\pi}{4} = \frac{\pi}{4}$

$\frac{\pi}{4}$

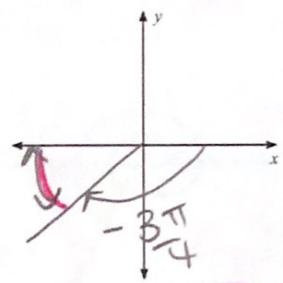
19) 525°

$-\frac{360°}{165°}$



180-165° = $\boxed{15°}$

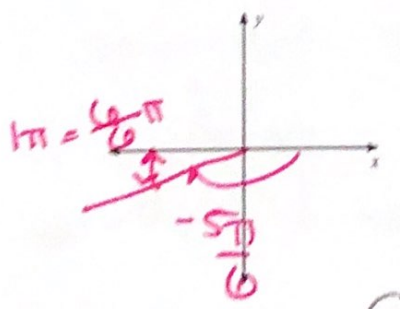
20) $-\frac{3\pi}{4}$



ref. angle

$\frac{4}{4}\pi - \frac{3\pi}{4} = \frac{\pi}{4}$

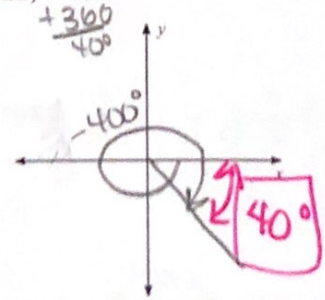
21) $-\frac{5\pi}{6}$



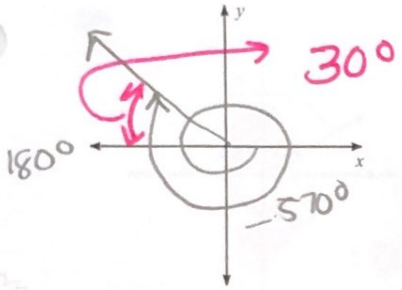
$\frac{6}{6}\pi - \frac{5\pi}{6} = \frac{\pi}{6}$

22) −400°

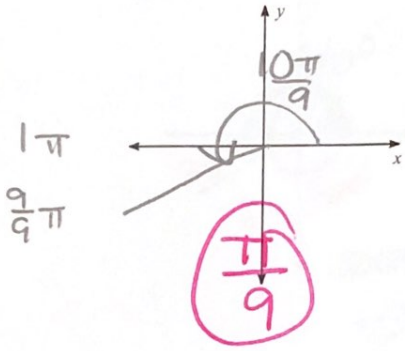
$+\frac{360}{40°}$



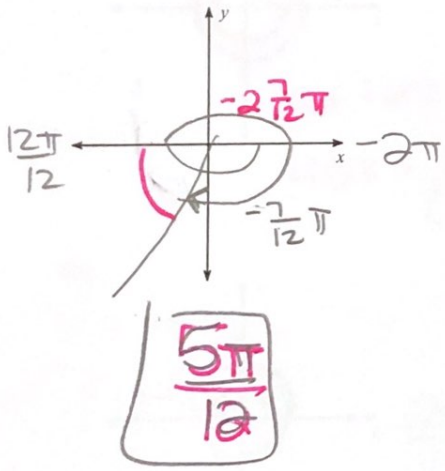
23) $-570° + 360° = -210°$



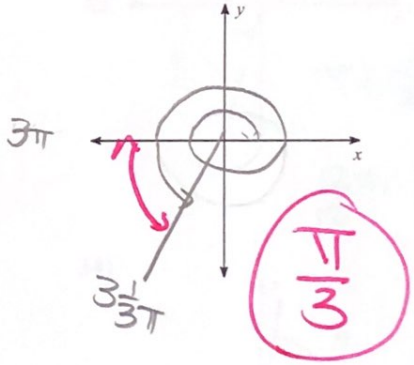
24) $\frac{10\pi}{9}$ $1\frac{1}{9}\pi$



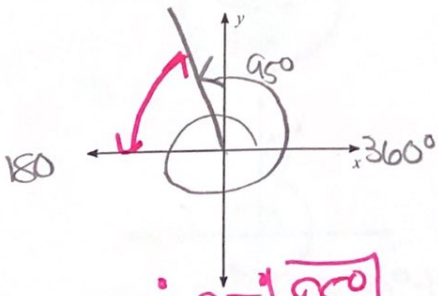
25) $-\frac{31\pi}{12}$ $-2\frac{7}{12}\pi$



26) $\frac{10\pi}{3}$ $3\frac{1}{3}\pi$

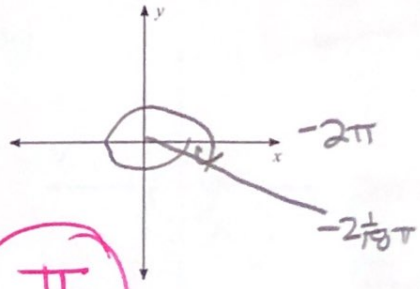


27) $455° - 360°$ $95°$



$180° - 95° = \boxed{85°}$

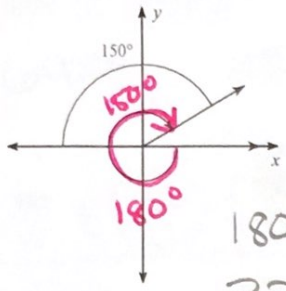
28) $-\frac{37\pi}{18}$ $-2\frac{1}{18}\pi$



$\frac{\pi}{18}$

Find the measure of each angle.

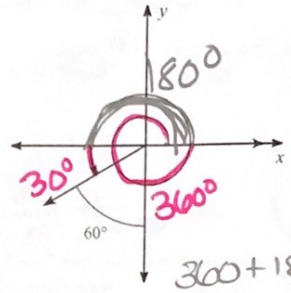
29)



$180° + 150°$

$330°$

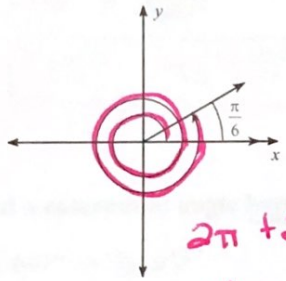
30)



$360 + 180 + 30$

$570°$

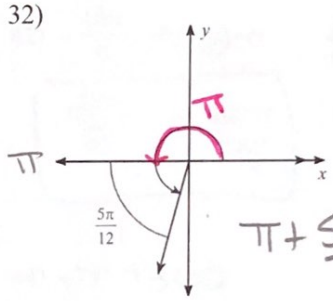
31)



$2\pi + 2\pi + \frac{\pi}{6}$

$4\frac{1}{6}\pi = \boxed{\frac{25}{6}\pi}$

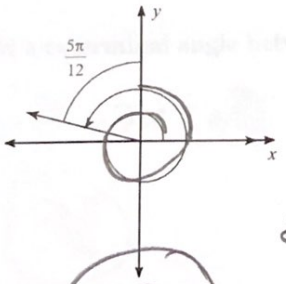
32)



$\pi + \frac{5\pi}{12}$

$\frac{12}{12}\pi + \frac{5\pi}{12} = \boxed{\frac{17\pi}{12}}$

33)

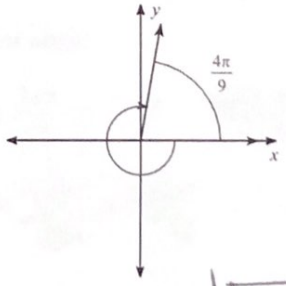


$\frac{2\pi}{1} + \frac{\pi}{2} + \frac{5\pi}{12}$

$\frac{24\pi}{12} + \frac{6\pi}{12} + \frac{5\pi}{12} =$

$\frac{35\pi}{12}$

34)

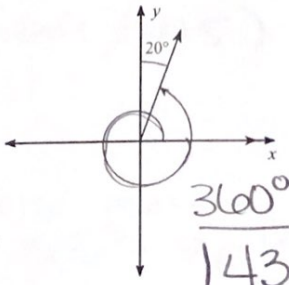


$2\pi - \frac{4\pi}{9}$

$\frac{18\pi}{9} - \frac{4\pi}{9}$

$\boxed{\frac{14\pi}{9}}$

35)

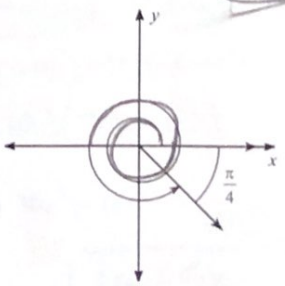


$(90° - 20°)$

$360° + 70°$

$\boxed{430°}$

36)



$2\pi + 2\pi - \frac{\pi}{4}$

$\frac{8\pi}{4} + \frac{8\pi}{4} - \frac{\pi}{4}$

$\frac{15\pi}{4}$

Find a positive and a negative coterminal angle for each given angle.

37) $332°$ $\pm 360°$

$692°, -28°$

38) $90°$ $\pm 360°$

$450°, -270°$

39) $\frac{31\pi}{18}$ $\pm 2\pi$ $\left(\frac{36\pi}{18}\right)$

$\boxed{\frac{67\pi}{18}, \frac{-5\pi}{18}}$

40) $\frac{47\pi}{45}$ $\pm 2\pi$ $\left(\frac{90\pi}{45}\right)$

$\boxed{\frac{137\pi}{45}, -\frac{43}{45}}$

41) $-315°$ $\pm 360°$

$\boxed{45°, -675°}$

42) $-\frac{16\pi}{9}$ $\pm 2\pi$ $\pm \frac{18\pi}{9}$

$\boxed{\frac{2\pi}{9}, -\frac{34\pi}{9}}$

Find a coterminal angle between 0° and 360°.

43) $647°$ $-360°$

$287°$

44) $-75°$ $+360$

$285°$

Find a coterminal angle between 0 and 2π for each given angle.

45) $-\frac{3\pi}{4}$ $+2\pi$ $+\frac{8\pi}{4}$

$\frac{5\pi}{4}$

46) $\frac{71\pi}{12}$ -2π $\frac{24\pi}{12}$

too big $\frac{47\pi}{12} - \frac{24\pi}{12} = \boxed{\frac{23\pi}{12}}$

Factor each completely.

47) $v^2 - 4v - 45$ (+ ×)

$(v-9)(v+5)$

48) $7x^2 + 53x - 90$

×	+
630	53
(63)(−10)	

$7x^2 + 63x - 10x - 90$

$7x(x+9) - 10(x+9)$

$(x+9)(7x-10)$

49) $15p^2 - 140p + 45$

×	+
27	−28
−27	−1

GCF $5(3p^2 - 28p + 9)$

$5[3p^2 - 27p - 1p + 9]$

$5[3p(p-9) - 1(p-9)]$ $5(p-9)(3p-1)$

50) $30x^2 - 12x$ GCF

$\boxed{6x(5x-2)}$

