Watkins
6th Grade

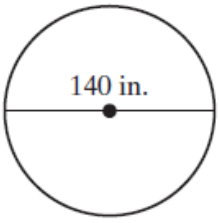
Quiz 8.1-8.7 Study Guide

Name _____

Circumference and Area of a Circle: Find the **exact** and **approximate circumference** and **area** of each circle.

1. Circumference (exact) 140π in Area (exact) 4900π in^2

   Circumference (approx) 439.6 in Area (approx) 15386 in^2

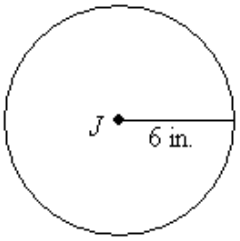


$C = \pi d$
$C = \pi \cdot 140$
140 × 3.14 = 560 + 1400 + 42000 = 439.60

$A = \pi r^2$
$r = d \div 2$
$r = 140 \div 2$
$r = 70$
$A = \pi \cdot 70^2$
$A = \pi \cdot 4900$
70 × 70 = 4900
4900 × 314 = 19600 + 149600 + 1470000 = 1538600

2. Circumference (exact) 12π in Area (exact) 36π in^2

   Circumference (approx) 37.68 in Area (approx) 113.04 in^2

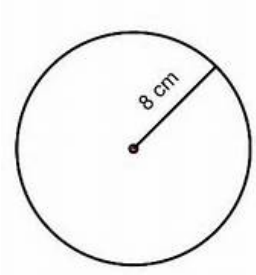


$C = 2\pi r$
$C = 2\pi 6$
$C = 12\pi$
314 × 12 = 628 + 3140 = 3768

$A = \pi r^2$
$A = \pi 6^2$
$A = \pi 6 \cdot 6$
$A = \pi \cdot 36$
314 × 36 = 1884 + 9420 = 113.04

3. Circumference (exact) 16π cm Area (exact) 64π in^2

   Circumference (approx) 50.24 cm Area (approx) 200.96 in^2



$C = 2\pi r$
$C = 2\pi \cdot 8$
$C = 16\pi$
314 × 16 = 1884 + 3140 = 5024

$A = \pi r^2$
$A = \pi 8^2$
$A = \pi \cdot 8 \cdot 8$
$A = \pi \cdot 64$
314 × 64 = 1256 + 18840 = 20096

8.9 × 1.9 = 171 + 1.9 = 17.1

Perfect Squares for $1^2 - 20^2$

1, 4, 9, 16, 25, 36, 49, 64, 81, 100, 121, 144, 169, 196, 225, 256, 289, 324, 361, 400

Square Roots: Estimate each square root to the nearest integer. (Do not use a calculator for this)

4. $\sqrt{201}$

$\sqrt{169} < \sqrt{201} < \sqrt{225}$

$14 < \sqrt{201} < 15$

$\sqrt{201} \approx$ 15

5. $\sqrt{25} = 5$

6. $\sqrt{400}$

$\sqrt{400} = 20$

7. $\sqrt{196} = 14$

8. $\sqrt{169} = 13$

9. $\sqrt{52}$

$\sqrt{49} < \sqrt{52} < \sqrt{64}$

$7 < \sqrt{52} < 8$

$\sqrt{52} \approx 7$

Rational and Irrational Numbers Identify each number as rational or irrational

10. $\sqrt{64} = 8$ Rational

11. $2\frac{5}{6}$ Rational

12. $-1.\overline{2}$ Rational

13. $\sqrt{50}$ Irrational

14. $\sqrt{1} = 1$ Rational

15. How are irrational numbers different from rational numbers?

Irrational numbers have decimals that don't terminate (end) and don't repeat.

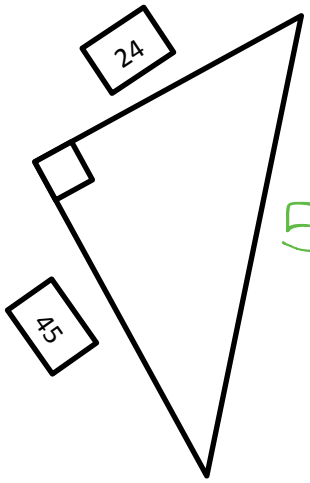
Irrational numbers cannot be written as a fraction.

Pythagorean Theorem: Find the missing side length. You may use a calculator for these **SHOW WORK!**

- **Include Units** in your answer

$a^2 + b^2 = c^2$

16.



51 units

Show Work!

$24^2 + 45^2 = c^2$

$576 + 2025 = c^2$

$2601 = c^2$

$\sqrt{2601} = \sqrt{c^2}$

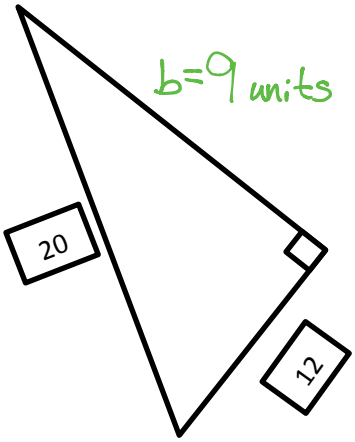
$\sqrt{2601} = c$

$51 = c$

24^2: 24 × 24 = 96 + 480 = 576

45^2: 45 × 45 = 225 + 1800 = 2025

17.



b=9 units

Show Work!

$12^2 + b^2 = 20^2$

$144 + b^2 = 400$

$-144 \quad -144$

$b^2 = 256$

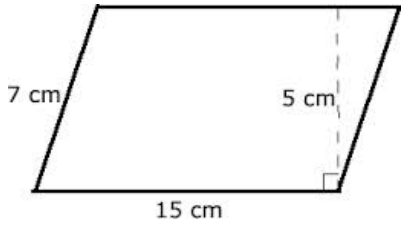
$\sqrt{b^2} = \sqrt{256}$

$b = \sqrt{256}$

$b = 16$ units

Area and Perimeter Find the area and perimeter of each shape.

18.



Area: 75 cm^2

Perimeter: 44 cm

$A = bh$

$A = 15 \times 5$

$A = 75$

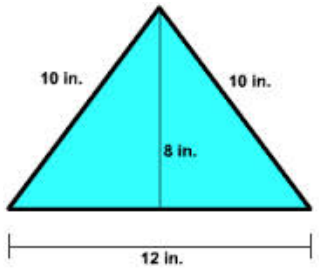
$P = 2l + 2w$

$= 2(l + w)$

$= 2(15 + 7)$

$= 2(22)$

19.



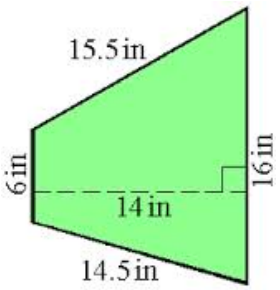
$A = \frac{1}{2}bh$
$= \frac{1}{2}12 \cdot 8$
$= 6 \cdot 8$
$= 48$

Area: $48\ in^2$

Perimeter: $32\ in$

$P = 10+10+12$

20.



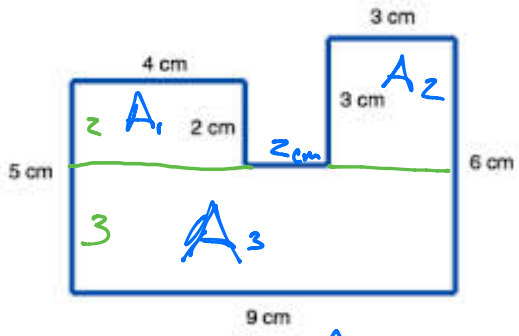
$A = \frac{1}{2}h(b_1+b_2)$
$A = \frac{1}{2}14(16+6)$
$= \frac{1}{2} \cdot 14 \cdot 22$
$= 7 \cdot 22$
$= 154$

Area: $154\ in^2$

Perimeter: $52\ in$

$P = 14.5+6+15.5+16$
$= 20.5+15.5+16$
$= 36.0+16 = 52$

21.



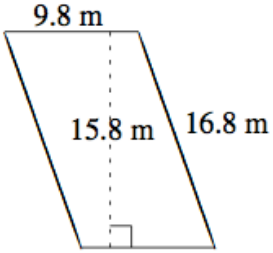
$A = A_1 + A_2 + A_3$
$= 2 \cdot 4 + 3 \times 3 + 3 \times 9$
$= 8+9+27$
$= 17+27$
$= 44$

Area: $44\ cm^2$

Perimeter: $34\ cm$

$P = 9+5+4+2+2+3+3+6$
$= 14+4+2+2+3+3+6$
$= 18+2+2+3+3+6$
$= 20+2+3+3+6$
$= 22+3+3+6$
$= 25+3+6$
$= 28+6$
$= 34$

22:



$A = bh$
$= 9.8 \times 15.8$

$158 \times 98 = 1264 + 14220 = 154.84$

Area: $154.84\ m^2$

Perimeter: $53.2\ m$

$P = 2(l+w)$
$P = 2(9.8+16.8)$
$= 2(26.6)$
$= 53.2$