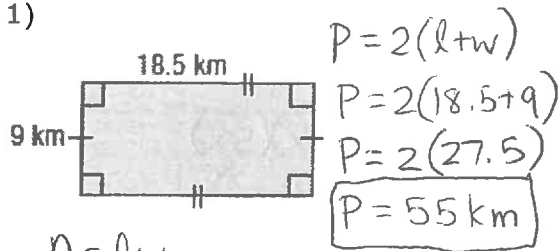Activity 30 Extra Practice

Name: ___KEY___

Date: _____
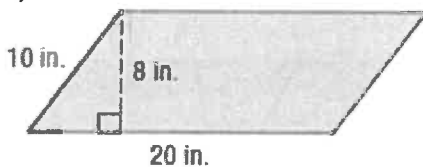
In questions 1-4, find the exact perimeter and area of each parallelogram.
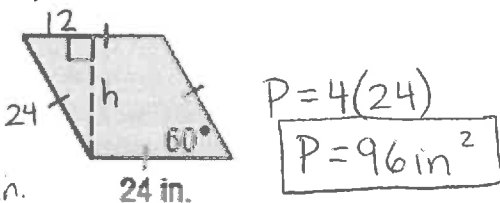
1)

18.5 km

9 km

$P = 2(\ell + w)$
$P = 2(18.5 + 9)$
$P = 2(27.5)$
$\boxed{P = 55\,km}$

$A = \ell w$
$A = (18.5)(9)$
$\boxed{A = 166.5\,km^2}$

2)

10 in.   8 in.

20 in.

$P = 20 + 10 + 20 + 10$ $A = bh$
$\boxed{P = 60\,in.}$ $A = (20)(8)$
                            $\boxed{A = 160\,in^2}$

3)

12

x
$2x$ $x\sqrt{3}$
$h = 12\sqrt{3}\,in.$

24   h 60°

24 in.

$P = 4(24)$
$\boxed{P = 96\,in^2}$

$A = bh$
$A = (24)(12\sqrt{3})$
$\boxed{A = 288\sqrt{3}\,in^2}$

4)

26 in.

22 in. h

45°

$x\sqrt{2}$ x

x

$h = \dfrac{22}{\sqrt{2}} \cdot \dfrac{\sqrt{2}}{\sqrt{2}}$
$h = \dfrac{22\sqrt{2}}{2} = 11\sqrt{2}\,in.$

$A = bh$
$A = (26)(11\sqrt{2})$
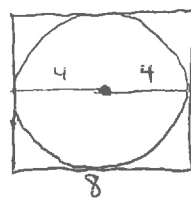$\boxed{A = 286\sqrt{2}\,in^2}$
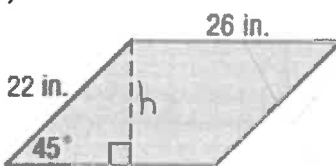
$P = 22 + 26 + 22 + 26$
$\boxed{P = 96\,in}$

5) The height of a parallelogram is three times its base. If the area of the parallelogram is 300 square inches, find its height.

$(h = 3b)$

$A = bh$
$300 = (b)(3b)$
$300 = 3b^2$
$100 = b^2$
$10 = b$

$h = 3(10)$
$\boxed{h = 30\,inches}$

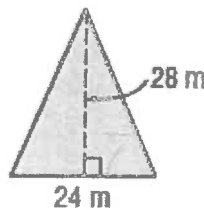6) A circle with radius 4 is inscribed in a square. What is the area of the square?

4   4

8

$A = s^2$
$A = (8)^2$
$\boxed{A = 64\,units^2}$

7) The height of a parallelogram is 5 feet more than its base. If the area of the parallelogram is 204 square feet, find its base and height.

$h = b + 5$

$A = bh$
$204 = (b)(b+5)$
$204 = b^2 + 5b$
$0 = b^2 + 5b - 204$
$0 = (b+17)(b-12)$

$b + 17 = 0$ $b - 12 = 0$
$b = -17$ $\boxed{b = 12\,ft.}$

$h = 12 + 5$
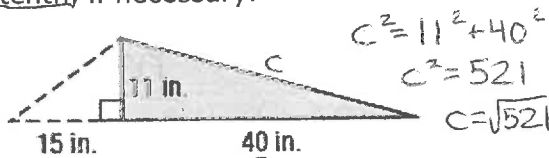$\boxed{h = 17\,ft.}$

8) Find the area of the triangle.

28 m

24 m

$A = \frac{1}{2} bh$
$A = \frac{1}{2}(24)(28)$
$\boxed{A = 336\,m^2}$

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9) Find the perimeter and area of the shaded triangle. Round to the nearest tenth, if necessary.

$c^2 = 11^2 + 40^2$
$c^2 = 521$
$c = \sqrt{521}$

11 in.

15 in.   40 in.

$P = 11 + 40 + \sqrt{521}$

$\boxed{P = 92.5 \text{ in.}}$

$A = \frac{1}{2} bh$
$A = \frac{1}{2}(40)(11)$
$\boxed{A = 220 \text{ in}^2}$

12) The base and height of a triangular-shaped countertop have a 6:5 ratio. Given that the area of the countertop is $450 \; in^2$, what are the measures of the base and height?

base = 6x
height = 5x

$A = \frac{1}{2} bh$
$450 = \frac{1}{2}(6x)(5x)$
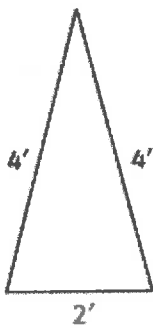$450 = \frac{1}{2}(30x^2)$
$900 = 30x^2$
$30 = x^2$
$\sqrt{30} = x$

$\boxed{b = 6\sqrt{30} \text{ in.}}$
$\boxed{h = 5\sqrt{30} \text{ in.}}$

13) Find the area of the triangle. Round to the nearest tenth.

C

5 ft   a

A 49°

7 ft   B

$A = \frac{1}{2}(5)(7)(\sin 49°)$
$\boxed{A \approx 13.2 \text{ ft}^2}$

10) Use Herron's Formula to find the area of the triangle.
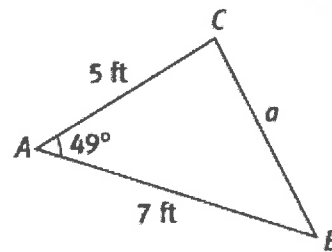
$S = 5$
$a = 4$
$b = 4$
$c = 2$

4'   4'

2'

$A = \sqrt{s(s-a)(s-b)(s-c)}$
$A = \sqrt{5(5-4)(5-4)(5-2)}$
$A = \sqrt{5(1)(1)(3)}$
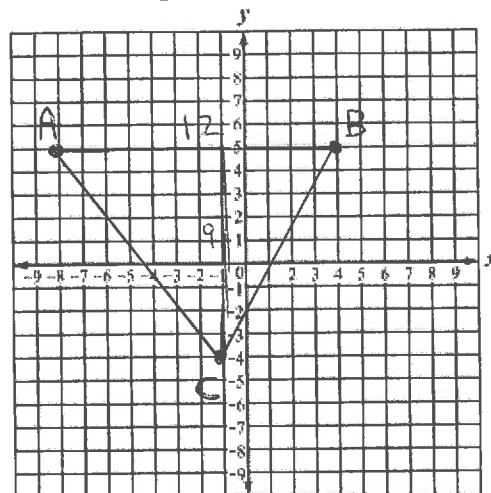$\boxed{A = \sqrt{15} \text{ ft}^2}$

14) A triangle has coordinates $A(-8,5)$, $B(4,5)$, and $C(-1,-4)$. What is the area of the triangle?

11) Use Herron's Formula to find the exact area of an isosceles triangle with a base that is 8 feet long and legs that are each 5 feet long.

$S = 9$
$a = 8$
$b = 5$
$c = 5$

$A = \sqrt{s(s-a)(s-b)(s-c)}$
$A = \sqrt{9(9-8)(9-5)(9-5)}$
$A = \sqrt{9(1)(4)(4)}$
$A = \sqrt{144}$
$\boxed{A = 12 \text{ ft}^2}$

$A = \frac{1}{2} bh$
$A = \frac{1}{2}(12)(9)$
$\boxed{A = 54 \text{ un}^2}$

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15) The base of a triangle is four times its height. If the area of the triangle is 800 square millimeters, find its base.

$b = 4h$

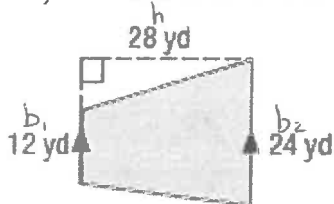$A = \frac{1}{2}bh$

$800 = \frac{1}{2}(4h)(h)$ $b = 4(20)$

$800 = 2h^2$ $b = 80mm$

$400 = h^2$

$20 = h$

16) Find the area of the trapezoid.

28 yd
h
b_1
12 yd b_2 24 yd

$A = \frac{1}{2}(b_1 + b_2)(h)$

$A = \frac{1}{2}(12 + 24)(28)$

$A = \frac{1}{2}(36)(28)$

$A = 504 \, yd^2$

17) In a trapezoid, the height is 10 feet and the length of one of its bases is 15 feet. If the area of the trapezoid is 190 ft^2, what is the length of the other base?

$A = \frac{1}{2}(b_1 + b_2)(h)$ $b_1 = 23 ft$

$190 = \frac{1}{2}(b_1 + 15)(10)$

$190 = 5(b_1 + 15)$

$38 = b_1 + 15$

$23 = b_1$

18) The area of a rhombus is 84 in^2 and one diagonal is 12 inches. Find the length of the other diagonal.
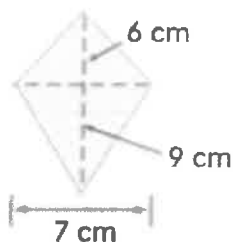
$A = \frac{1}{2}d_1 d_2$

$84 = \frac{1}{2}(12)(x)$

$84 = 6x$

$14 = x$

$14 \, inches$

19) Find the area of the kite.

6 cm

9 cm

7 cm

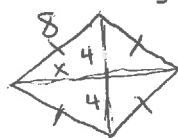$A = \frac{1}{2}d_1 d_2$

$A = \frac{1}{2}(15)(7)$

$A = 52.5 cm^2$

20) In a rhombus, the sides are 8 in. and one diagonal is 8 in. Find the area.

$x^2 = 8^2 - 4^2$

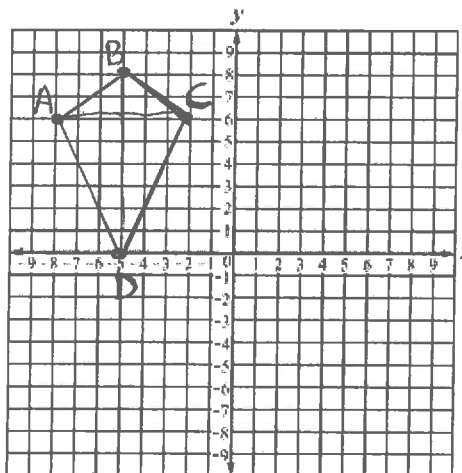$x^2 = 64 - 16$

$x^2 = 48$

$x = \sqrt{48} = 4\sqrt{3}$

$d_2 = 8\sqrt{3}$

$A = \frac{1}{2}(8)(8\sqrt{3})$

$A = 32\sqrt{3} \, in^2$

21) Find the area of the quadrilateral with the following vertices:

$A(-8, 6)$, $B(-5, 8)$, $C(-2, 6)$, and $D(-5, 0)$

The figure is a kite.

$A = \frac{1}{2}d_1 d_2$

$A = \frac{1}{2}(AC)(BD)$

$A = \frac{1}{2}(6)(8)$

$A = 24 \, un^2$