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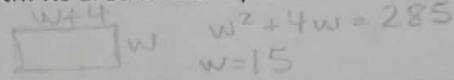
Solving Quadratics by Factoring - Word Problems

1. Find 2 consecutive positive integers whose product is 30. 5, 6

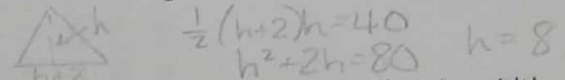
2. Find 2 numbers whose product is 57, and one of the numbers is 5 less than eight times the other number.

3, 19 $x(8x-5)=57$ $8x^2-5x=57$ $(8x+19)(x-3)$
 $8x^2-5x-57$ $x=\frac{19}{8}$ $x=3$

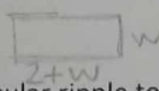
3. The length of a rectangular bedroom is 4 feet more than its width. Its area is 285 square feet. Find the length and width of the bedroom. $l = \underline{19}$, $w = \underline{15}$



4. The area of a triangle is 40 square centimeters. The base is 2 centimeters longer than its height. Find the length of the base and height. $b = \underline{10}$, $h = \underline{8}$



5. A newspaper advertisement has the shape of a rectangle whose length is 2 centimeters more than its width. The newspaper charges \$9 for each square centimeter. What are the dimensions of the ad if the total cost is \$315? 5cm, 7cm



6. A stone thrown into a still pond causes a circular ripple to spread. After 1 minute the radius of the ripple is r and after 2 minutes it has increased by 3 feet. If the area of the new circle is 49π square feet, find the radius of the new circle. Use $A = \pi r^2$. $r = \underline{7}$ $(3+4)$

7. The hypotenuse of a right triangle is 2 inches longer than the shortest side and 1 inch longer than the remaining side. Find the lengths of all sides of the triangle. 3, 4, 5

8. An artist is designing a rectangular stained glass window in such a way that the length of the window is 3 inches less than twice its width. What are the dimensions of the window if its area is 740 square inches?

20, 37 $2w-3$ $2w^2-3w=740$

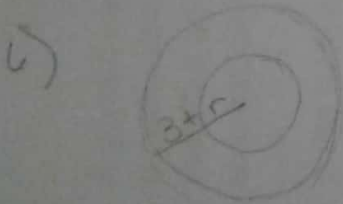
9. A 20-inch TV set has a diagonal measuring 20 inches. What is the width and height of a 20 inch TV set if its width is 4 inches more than its height? $w = \underline{16}$, $h = \underline{12}$

10. Two brothers were born in consecutive years. The product of their present ages is 156. How old are they now? 12, 13 $x(x+1)=156$ $x^2+x-156$

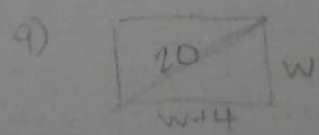
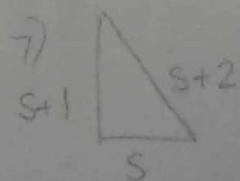
11. In a predator-prey model of foxes and rabbits, the number of prey (rabbits) is 10 times the number of predators (foxes). If the product of their populations is 36,000, what is the predator population? 600

12. In a casino, two dice are thrown by a gambler. If the difference between the face values of the two dice is 2 and the product of their values is 24, what numbers appeared on the face of the two dice? 6, 4

x $x-2$ $x(x-2)=24$ $x^2-2x-24=0$



$(r+3)^2\pi = 49\pi$
 $r^2+6r+9=49$
 $r^2+6r-40=0$
 $(r+10)(r-4)$
 $r=4$



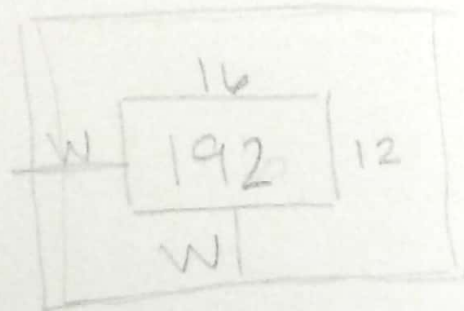
$w^2+(w+4)^2=20^2$
 $w^2+w^2+8w+16=400$
 $2w^2+8w-384$
 $w=12 = \text{height}$

13



A garden measuring 12m by 16m is to have a pedestrian pathway that is w meters wide installed all the way around it. Find an expression for the area of the pathway.

If the total area of the pathway is 380 m^2 . What is the width w , of the pathway?



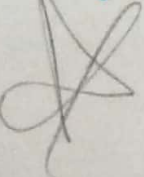
$$(2w+16)(2w+12) - 192$$

$$4w^2 + 56w + 192 - 192 = 380$$

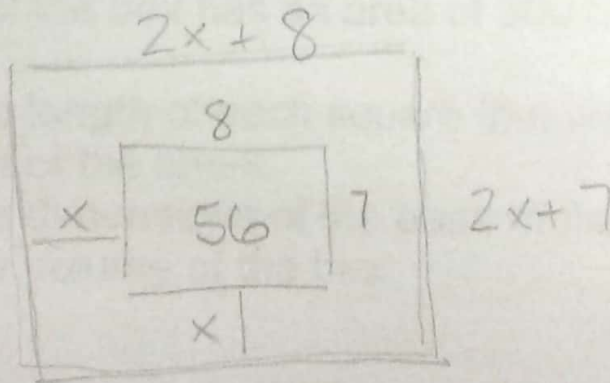
$$4w^2 + 56w - 380$$

$$w = 5\text{m}$$

14



A garden with dimensions of 7ft by 8ft with a uniform border around it. The area of the border around the garden is 76 square feet. What is the width of the border?



$$(2x+8)(2x+7) - 56 = 76$$

$$4x^2 + 14x + 16x + 56 - 56 = 76$$

$$4x^2 + 30x - 76 = 0$$

$$2(2x+19)(x-2)$$

$$x = 2$$

A picture placed the total the mat

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