**Solving Word Problems using Equations**

Find the solution to each question by using the variable x to represent the unknown in your working.

Write an equation and then solve it.

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| **Questions:** | | **Solutions:** | |
| 1. Twice a number is equal to six more than the number. | |  | |
| 2. Six less than a number is equal to one more than twice the number. | |  | |
| 3. One more than the product of a number and three is equal to five more than the number. | |  | |
| 4. The length of a rectangle is twice its width. If its perimeter is 42 cm, find its dimensions. | |  | |
| 5. The length of a rectangle is 5 cm longer than its width. If its perimeter is 42 cm, find its dimensions. | |  | |
| 6. The length of a rectangle is twice its width. Its area is 50 cm2, find its dimensions. | |  | |
| 7. The length of the base of a triangle is twice its perpendicular height. If its area is 36 cm2, find its length and perpendicular height. | |  | |
| 8. The length of a rectangle is 5 cm longer than its width. If its area is 36 cm2, find its dimensions. | |  | |
| 9. The lengths of a scalene triangle are in the ration 1:2:3. If its perimeter is 24 cm, find the side lengths. | |  | |
| 10. The ratio of the width to length in a rectangle is 2:3. Find the dimensions of this rectangle if its perimeter is 90 cm. | |  | |
| **Questions:** | | **Solutions:** | |
| 1. Twice a number is equal to six more than the number. What is the number ? | | 2𝑥 = 𝑥 + 6  𝑥 = 6 | |
| 2. Six less than a number is equal to one more than twice the number. What is the number ? | | 𝑥 − 6 = 2𝑥 + 1  −6 = 𝑥 + 1  𝑥 = −7 | |
| 3. One more than the product of a number and three is equal to five more than the number. What is the number ? | | 3𝑥 + 1 = 𝑥 + 5  2𝑥 + 1 = 5  2𝑥 = 4  𝑥 = 2 | |
| 4. The length of a rectangle is twice its width. If its perimeter is 42 cm, find its dimensions. | | 2x 2𝑥 + 𝑥 + 2𝑥 + 𝑥 = 42  6𝑥 = 42  x 𝑥 = 7  Length: 14 cm Width: 7 cm | |
| 5. The length of a rectangle is 5 cm longer than its width. If its perimeter is 42 cm, find its dimensions. | | x+5 𝑥 + 5 + 𝑥 + 𝑥 + 5 + 𝑥 = 42  4𝑥 + 10 = 42  x 4𝑥 = 32  𝑥 = 8  Length: 13 cm Width: 8 cm | |
| 6. The length of a rectangle is twice its width. Its area is 50 cm2, find its dimensions. | | 2x 2𝑥 × 𝑥 = 50  2𝑥2 = 50  x 𝑥2 = 25  𝑥 = ±5  Length: 10 cm Width: 5 cm (𝑥 > 0) | |
| 7. The length of the base of a triangle is twice its perpendicular height. If its area is 36 cm2, find its length and perpendicular height. | | 1  x 2 × 2𝑥 × 𝑥 = 36  𝑥2 = 36  2x 𝑥 = ±6  Length: 12 cm Perp.height: 6 cm (𝑥 > 0) | |
| 8. The length of a rectangle is 5 cm longer than its width. If its area is 36 cm2, find its dimensions. | | x+5 𝑥(𝑥 + 5) = 36  [Using guess and check]  x 𝑥 = 4  Length: 9 cm Width: 4 cm | |
| 9. The lengths of a scalene triangle are in the ration 1:2:3. If its perimeter is 24 cm, find the side lengths. | | 3x 𝑥 + 2𝑥 + 3𝑥 = 24  x 6𝑥 = 24  2x 𝑥 = 4  Lengths are: 4 cm, 8 cm, 12 cm | |
| 10. The ratio of the width to length in a rectangle is 2:3. Find the dimensions of this rectangle if its perimeter is 90 cm. | | 3x 3𝑥 + 2𝑥 + 3𝑥 + 2𝑥 = 90  10𝑥 = 90  2x 𝑥 = 9  Length: 27 cm Width: 18 cm | |