**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 + 6𝑥 = 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 + 1𝑥 = −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 + 52𝑥 + 1 = 52𝑥 = 4𝑥 = 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 = 426𝑥 = 42x 𝑥 = 7Length: 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 = 424𝑥 + 10 = 42x 4𝑥 = 32𝑥 = 8Length: 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 = 502𝑥2 = 50x 𝑥2 = 25𝑥 = ±5Length: 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. | 1x 2 × 2𝑥 × 𝑥 = 36𝑥2 = 362x 𝑥 = ±6Length: 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 = 4Length: 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 = 24x 6𝑥 = 242x 𝑥 = 4Lengths 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 = 9010𝑥 = 902x 𝑥 = 9Length: 27 cm Width: 18 cm |