WORD PROBLEMS 2

1) The addition of two consecutive even numbers is 126. Find the numbers.

2) The length of the unequal side of an isosceles triangle is 15 cm. If the perimeter is 46 cm, how long are the other sides?

3) A rectangle garden is 6 metres longer than its width. If the perimeter is 92 metres, how long is it?

4) 16 lbs of the Brand M Cinnamon was made by combining 12 lbs of Indonesian cinnamon which costs $19/lb with 4 lbs of Thai cinnamon which costs $11/lb. Find the cost per lb of the mixture.

5) Some kilograms of olive oil, which costs €5/kg, are combined with sunflower oil which costs €2.5/kg, to obtain 40 kg of a mixture which costs €3.25/kg. How many kilograms of each type will we have to put into the mixture?

6) I bought 6 pens and I received $2 back in. If I bought 9 pens, I would need $2.5 extra. How much money have I got?

7) Marie tells Patty: "The triple of the age that I was three years ago is double the age I will be in 10 years' time." How old is Marie?

8) A father is 42 years old and his son is 17. When will the dad be two times older than his son?

9) The oldest son will inherit three-fifths of his father's money, the second son will inherit three-fourths of the remainder, and the youngest will be given 18 000€. How much is the total inheritance?

10) A bus is travelling with 48 passengers. When it arrives at stop, x passengers get off and 3 get on. At the next stop half the passengers get off and 7 get on. There are now 22 passengers. Find x.

SOLUTION

1) The addition of two consecutive even numbers is 126. Find the numbers.
Two consecutive EVEN numbers: 2x and 2x + 2
 Equation: 2x + 2x + 2 = 126; 4x = 126 – 2 ; 4x = 124; x = 31
                2x = 62; 2x + 2 = 64
Answer: Numbers are 62 and 64

2) The length of the unequal side of an isosceles triangle is 15 cm. If the perimeter is 46 cm, how long are the other sides?
Equal sides x, unequal side 15
Equation: 2x + 15 = 46; 2x = 46 – 15; 2x = 31; x = 15.5
Answer: The other sides are 15.5 cm long

3) A rectangle garden is 6 metres longer than its width. If the perimeter is 92 metres, how long is it?
Length x + 6 ; width x
Equation: 2(x + 6) + 2x = 92; 2x + 12 + 2x = 92; 4x = 92 – 12; 4x = 80; x = 20
Answer the length of the rentangle garden is 26 metres

4) 16 lbs of the Brand M Cinnamon was made by combining 12 lbs of Indonesian cinnamon which costs \$19/lb with 4 lbs of Thai cinnamon which costs \$11/lb. Find the cost per lb of the mixture.

	Indonesian	Thai	Brand M
lb	12	4	16
Cost per lb	\$19/lb	\$11/lb	x

Equation: $12 \cdot 19 + 4 \cdot 11 = 16x \rightarrow 272 = 16x \rightarrow x = 17$
Answer: The cost of the mixture is \$17/lb

5) Some kilograms of olive oil, which costs €5/kg, are combined with sunflower oil which costs €2.5/kg, to obtain 40 kg of a mixture which costs €3.25/kg. How many kilograms of each type will we have to put into the mixture?

	Olive oil	Sunflower	Mixture
kilograms	x	40 - x	40
Cost per kg	€5/kg	€2.5/kg	€3.25/kg

Equation: $5x + 2.5(40 - x) = 40 \cdot 3.25 \rightarrow 5x + 100 - 2.5x = 130$

$5x - 2.5x = 130 - 100 \rightarrow 2.5x = 30 \rightarrow x = \dfrac{30}{2.5} = 12$

Answer: We have to put 12 kg of olive oil and 28 kg of sunflower oil

6) I bought 6 pens and I received $2 back in. If I bought 9 pens, I would need $2.5 extra. How much money have I got?

Price of one pen x

Equation: 6x + 2 = 9x – 2.5; 2 + 2.5 = 9x – 6x; 4.5 = 3x; x = 1.5

I have got 6x + 2 = 9 + 2 = 11

Answer I have $11

6) Marie tells Patty: "The triple of the age that I was three years ago is double the age I will be in 10 years' time." How old is Marie?

	now	3 years ago	In 10 years' time
Marie's age	x	x - 3	x + 10

Equation: $3(x - 3) = 2(x + 10) \rightarrow 3x - 9 = 2x + 20 \rightarrow x = 29$

Answer: Marie is 29 years old

7) A father is 42 years old and his son is 17. When will the dad be two times older than his son?

	now	In x years' time
father	42	42 + x
son	17	17 + x

Equation: $42 + x = 2(17 + x) \rightarrow 42 + x = 34 + 2x \rightarrow 42 - 34 = 2x - x \rightarrow x = 8$

Answer: in 8 years' time

8) The oldest son will inherit three-fifths of his father's money, the second son will inherit three-fourths of the remainder, and the youngest will be given 18 000€. How much is the total inheritance?

The oldest son $\rightarrow \dfrac{3}{5}x$; the second son $\rightarrow \dfrac{3}{4}\left(\dfrac{2}{5}x\right) = \dfrac{3}{10}x$; the youngest $\rightarrow 18000$

$\dfrac{3x}{5} + \dfrac{3x}{10} + 18000 = x \rightarrow 6x + 3x + 180000 = 10x \rightarrow x = 180000$

Answer: the total inheritance is 180 000€

9)   A bus is travelling with 48 passengers. When it arrives at stop, x passengers get off and 3 get on. At the next stop half the passengers get off and 7 get on. There are now 22 passengers. Find x.

1^{st}stop $\rightarrow 48 - x + 3$ 2nd stop $\rightarrow \dfrac{48 - x + 3}{2} + 7$

$\dfrac{48 - x + 3}{2} + 7 = 22 \rightarrow 48 - x + 3 + 14 = 44 \rightarrow x = 48 - 44 + 3 + 14 = 21$

Answer: x was 21 passengers