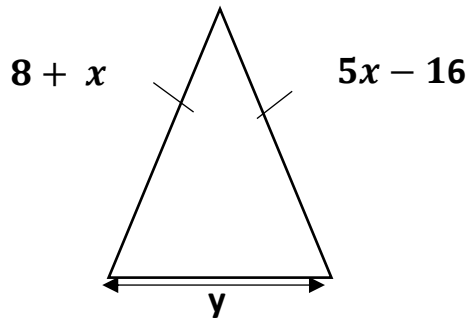




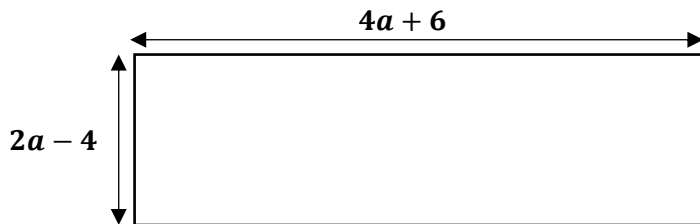
Advance Maths Problem Solving Worksheet H

1. Jude has 130 balloons. He has a mixture of blue and red balloons. Some of the balloons burst and Jude now has:
 $\frac{1}{3}$ of his blue balloons and $\frac{3}{5}$ of his red balloons left.
Jude now has 36 more red balloons than blue balloons left.
How many of each colour balloon did Jude have at the start?

2. Below is an isosceles triangle. Its perimeter measures 35cm. What is the length of side y ?



3. The perimeter of this rectangle is 148cm. What is the value of a ?



4. James bought two pens and three erasers. It cost £5. Riya bought two pens and two erasers and spent £4.50. How much would it cost to buy five pens and three erasers?



Answers

1. Jude has 130 balloons in total. He has a mixture of blue and red balloons. Some of the balloons burst and Jude now has:
 $\frac{1}{3}$ of his blue balloons and $\frac{3}{5}$ of his red balloons left.
Jude now has 36 more red balloons than blue balloons left.
How many of each colour balloon did Jude have at the start?

R = Red, B = Blue

1st Step: $R+B = 130$, so $R = 130 - B$

2nd Step: $\frac{b}{3} + 36 = \frac{3R}{5}$ Substitute for r

$$\frac{b}{3} + 36 = \frac{3(130-b)}{5}$$

$$\frac{b}{3} + 36 = \frac{390-3b}{5}$$

$$\frac{b}{3} + 36 = 78 - \frac{3b}{5}$$

$$\frac{b}{3} + \frac{3b}{5} = 78 - 36$$

$$\frac{5b}{15} + \frac{9b}{15} = 42$$

$$\frac{14b}{15} = 42$$

$$14b = 630$$

$$b=45$$

If B = 45, then Red = 85

Trial and Error is also a legitimate method to solve this problem. I used the “subtract the difference, share and add the difference back on” method to get a close starting point.

130 balloons – 36 balloons = 94 balloons.

Share

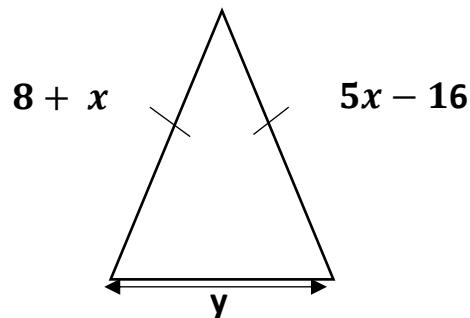
$$47 \text{ Red} + 36 = 83$$

$$47 \text{ Blue}$$

As red is $\frac{3}{5}$ of a number, swap a two from blue to red. To make the red a multiple of 5. It also made blue a multiple of 3.



2. Below is an isosceles triangle. Its perimeter measures 35cm. What is the length of side y ?

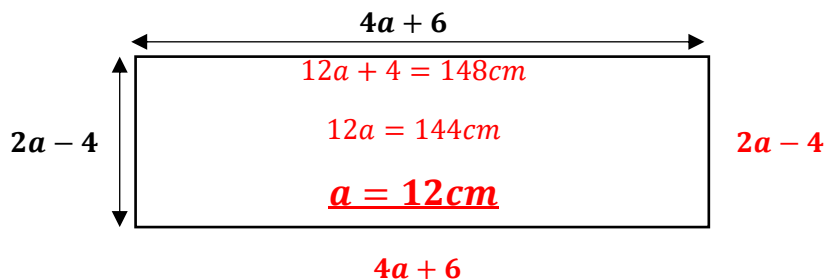


$$\begin{aligned}8 + x &= 5x - 16 \\24 &= 4x \\x &= 6\text{cm}\end{aligned}$$

Substitute $x = 6\text{cm}$ into the $8 + x$. The equal sides are 14cm each.

So $y = 7$

3. The perimeter of this rectangle is 148cm. What is the value of a ?



4. James bought two pens and three erasers. It cost £5. Riya bought two pens and two erasers and spent £4.50. How much would it cost to buy five pens and three erasers?

$$\text{James: } 2p + 3e = 500$$

$$\text{Riya: } 2p + 2e = 450$$

$$\text{Difference: } e = 50$$

Using Riya's equation if $e=50$: $2p + 100 = 450$ so $2p = 350$ and $p = 175$

Using $e = 50$ and $p = 175$

$$5p + 3e = ?$$

$$5(175) + 3(50) = ?$$

$$875 + 150 = \underline{\underline{\pounds 10.25}}$$