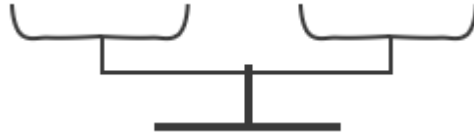


Scales Problems

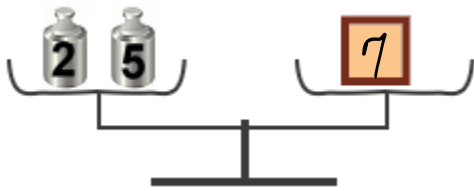
This is a pan balance or scales. Things go into the two "pans", and the heavier pan will go down, like in a seesaw.

If the two things weigh the same, the balance stays balanced.

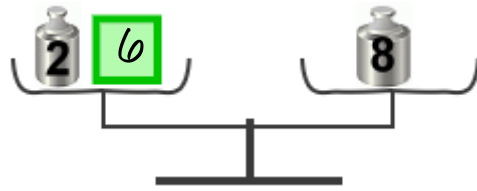


1. Solve how much each geometric shape "weighs". You can use either pounds or kilograms.

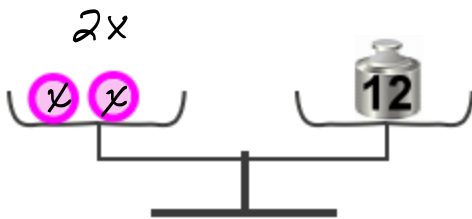
$$2 + x = 8$$



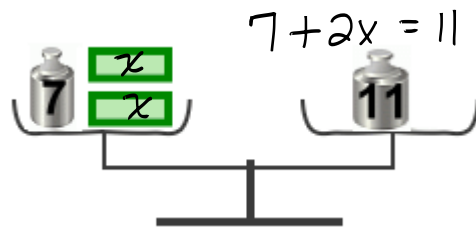
a. The square weighs 7



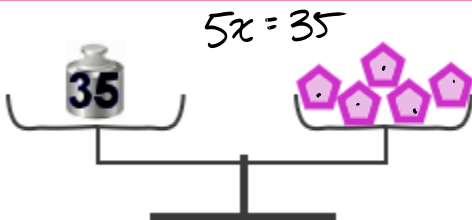
b. The square weighs 6



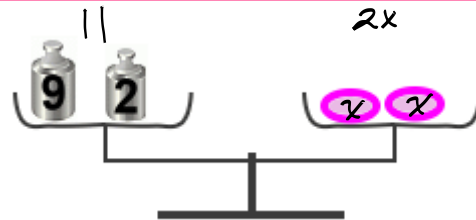
c. One ball weighs 6



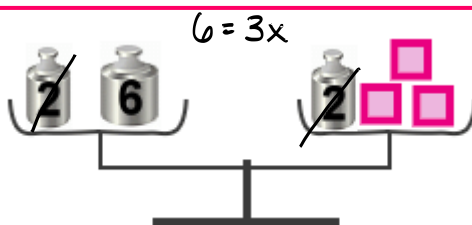
d. One rectangle weighs



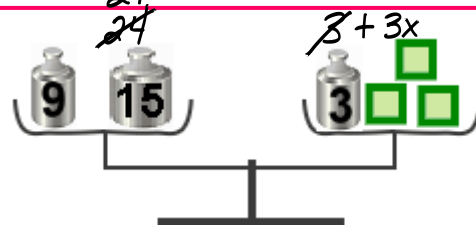
e. One pentagon weighs 7



f. One oval weighs 5.5



g. One square weighs 2

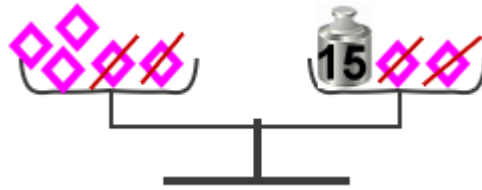


h. One square weighs 7

If there are "unknown shapes" on both sides, use this "trick":

Take away the same amount of unknown shapes from both sides.

The scale WILL continue to stay balanced!

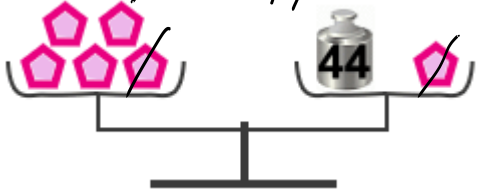


Take away two diamonds from both sides. Then we see that *three* diamonds weigh 15.

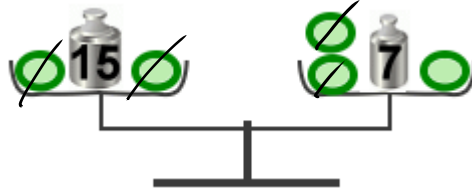
2. Solve.

$$5x = 44 + x$$

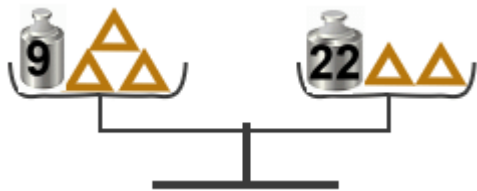
$$4x = 44$$



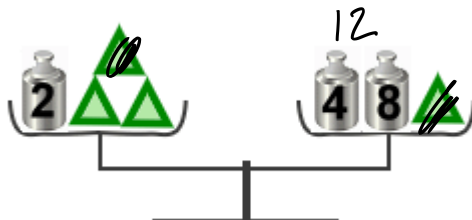
a. One pentagon weighs 11



b. One oval weighs 8

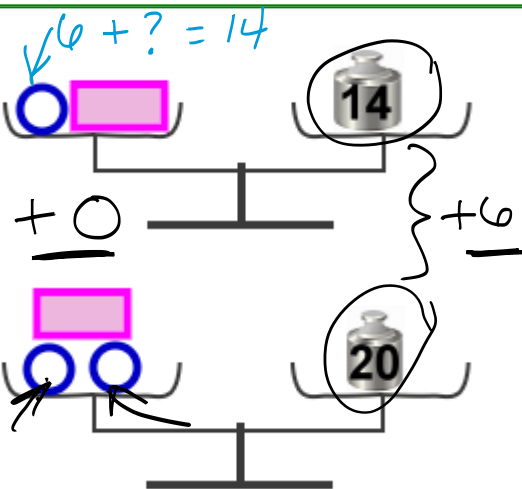


c. One triangle weighs

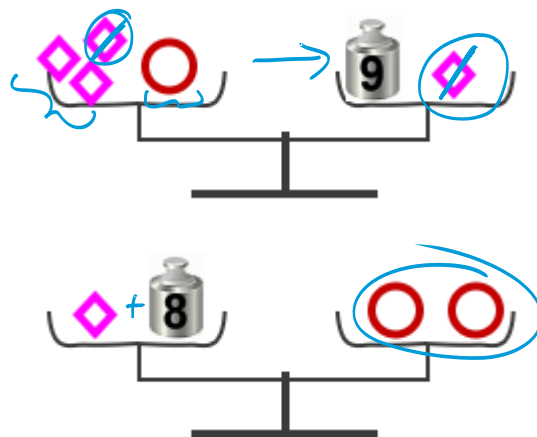


d. One triangle weighs

3. Solve. These are trickier. Use *both* balances to figure out the *two* unknown shapes.

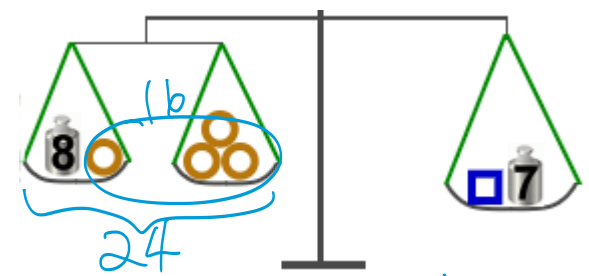
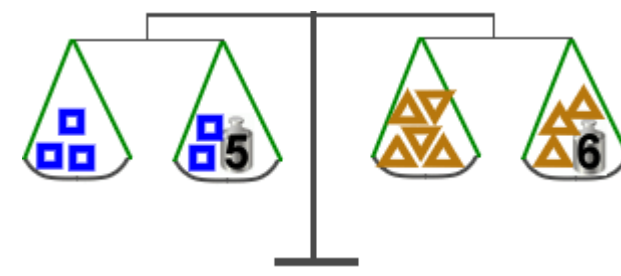
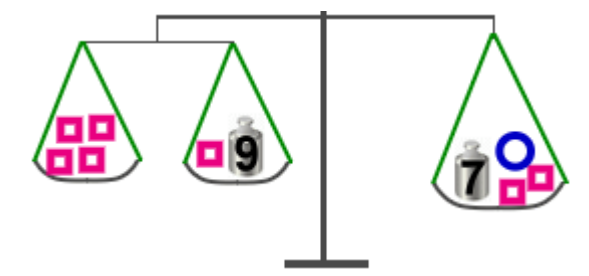
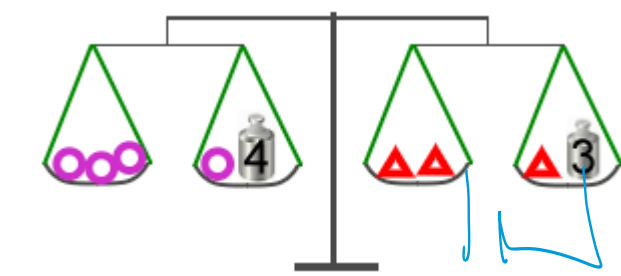


a. One rectangle weighs 8
One circle weighs 6



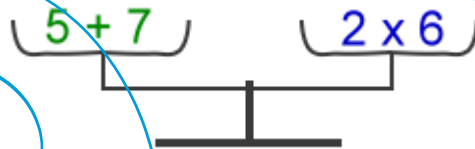
b. One circle weighs 5
One diamond weighs 2

4. A few more with double scales...

 <p>a. One circle weighs <u>4</u> One square weighs <u>17</u></p>	 <p>b. One square weighs _____ One triangle weighs _____</p>
 <p>c. One square weighs _____ One circle weighs _____</p>	 <p>d. One circle weighs <u>4</u> One triangle weighs <u>3</u></p>

In mathematics, the equal sign "=" is like a scales that is balanced. Something is on the right side, and something is on the left side, and they are equal or "balanced"

$$5 + 7 = 2 \times 6$$



5. Find the unknown number that goes on the empty line.

<p>a. $78 + \underline{\quad} = 148$</p> <p>$160 = \underline{\quad} + 90$</p> <p>$50 - \underline{\quad} = 32$</p>	<p>b. $7 + 6 + 6 = \underline{\quad} - 10$</p> <p>$5 + 5 + 5 + \underline{\quad} = 2 \times 12$</p> <p>$16 + 19 = 2 \times \underline{\quad} + 1$</p>	<p>c. $2 \times 50 = 40 + \underline{\quad}$</p> <p>$7 \times 6 = 2 \times \underline{\quad}$</p> <p>$4 \times 6 - 7 = 2 \times \underline{\quad} + 1$</p>
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On the next page you will find empty scales pictures. You can print out the page and devise your own problems. But be careful! If you just make random problems, the solutions are likely to be fractions. See also:

[Balance word problems from Math Kangaroo](#)

http://www.mathplayground.com/algebraic_reasoning.html - weighing scales game that practices algebraic reasoning

<http://illuminations.nctm.org/ActivityDetail.aspx?ID=33> - an interactive pan balance with shapes.

