Alan's Trick	Belinda's Trick	Carol's Trick
1. Think of an number 2. Multiply it by 3 3. Add 6 4. Divide the answer by 3 5. Take away the number you first thought of. You always get 2	1. Think of a number 2. Multiply it by 5 3. Divide it by 5. You end up with the number you started with	1. Think of a number 2. Multiply it by 5 3. Add 20 4. Divide the answer by 5 5. Take away 4 from your answer You end up with the number you stared with
David's Trick	**Eric's Trick**	**Fiona's Trick**
1. Think of a number 2. Multiply it by 4 3. Add 8 4. Divide the answer by 4 5. Take away the number you first thought of. You always get 2	1. Think of a number 2. Multiply it by 5 3. Subtract 35 4. Divide by 5 5. Add 7. You end up with the number you started with	1. Think of a number 2. Multiply it by 2 3. Add 7 4. Multiply it by 5 5. Subtract 35 6. Divide by 10. You end up with the number you started with

1. Using a starting number of 10 check to see if each of the six tricks above actually do work!

2. Try different starting numbers to see whether they work for any starting numbers.

3. Algebra can be used to prove that Alan's trick works:

1. . . . . n
2. . . . . $3n$
3. . . . . $3n + 6$
4. . . . . $\frac{3n+6}{3} = n + 2$
5. . . . . $n + 2 - n = \underline{\underline{2}}$

Check that this algebra works. What is happening in stage 4? Can you explain?

4. Can you write algebraic expressions to prove that the other tricks work in a similar way.

5. How does Fiona' s trick work?

6. Can you invent some tricks of your own?

Answers:

Belinda's Trick	Carol's Trick	David's Trick	Eric's Trick	Fiona's Trick
1. . . . . n	**1.** . . . . n	**1.** . . . . n	**1.** . . . . n	**1.** . . . . n
2. . . . . $5n$	**2.** . . . . $5n$	**2.** . . . . $4n$	**2.** . . . . $5n$	**2.** . . . . $2n$
3. . . . . $\frac{5n}{5} = \underline{n}$	**3.** . . . . $5n + 20$	**3.** . . . . $4n + 8$	**3.** . . . . $5n - 35$	**3.** . . . . $2n + 7$
	4. . . . . $\frac{5n+20}{5} = n + 4$	**4.** . . . . $\frac{4n+8}{4} = n + 2$	**4.** . . . . $\frac{5n+35}{5} = n - 7$	**4.** . . . . $5(2n + 7) = 10n + 35$
	5. . . . . $n + 4 - 4 = \underline{n}$	**5.** . . . . $n + 2 - n = \underline{\underline{2}}$	**5.** . . . . $n - 7 + 7 = n$	**5.** . . . . $10n + 35 - 35 = 10n$
				6. . . . . $\frac{10n}{10} = \underline{\underline{n}}$