**Sometimes, Always, Never – Solutions**

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| **Right angles****ALWAYS**A rectangle has four right angles. The most a pentagon can have is three. The other two would have to be obtuse angles. | **Square roots****SOMETIMES**True if the number is 1 or more (√4 = 2 for example) but not if the number is less than 1 (√0.25 = 0.5 for example). | **Digits****SOMETIMES**True if the numbers are greater than 1 (1456>987 for example) but not true for numbers less than 1 (0.009<0.8 for example). |
| **Consecutive numbers****ALWAYS**Try it and see.You can prove using algebra:Call the consecutive numbers n, n+1, n+2.Add them: n + n+1 + n+2 = 3n +3Factorising gives 3(n+1) which is a multiple of 3 and thus divisible by 3. | **Area and perimeter****SOMETIMES**You need to draw this to demonstrate.If you cut a corner off a shape you will reduce both area and perimeter.If you cut out just a small bit of the perimeter and replace it with a balloon shape inside the original shape, you will reduce the area but increase the perimeter. | **Add a nought****SOMETIMES**True if the number is a whole number (e.g. 5 x 10 = 50), but not if it is a decimal (e.g. 4.3 x 10 is 43, not 4.30, which has exactly the same value as 4.3). |
| **Sale****NEVER**For example, £80 reduced by 25% is £60. £60 increased by 25% is £75. Not the same. | **Pay rise****SOMETIMES**If Max earns more than Jim, or they earn the same, then Max will get the bigger pay rise.But say Max earns £20 000 and Jim earns £30 000, then Max gets a rise of £6000 and Jim gets a rise of £7500. | **Lottery****NEVER**The probability for each number is exactly the same. |
| **Bigger fractions****ALWAYS**… if you assume the number is positive. If it’s negative then the fraction gets smaller. | **Smaller fractions****NEVER**A fraction will stay the same value if you divide (or multiply) the top and bottom by the same number. | **Birthdays****ALWAYS**You have 10 learners and only 7 days of the week, so at least two of the learners must have been born on the same day. |