Always, Sometimes, Never

Math 8

Number

- The area of a square is a square number.
- The square root of a number is less than or equal to the number.
- The square of a number is greater than or equal to the number.
- When you square an odd number, the result will be odd.
- A whole number has an odd number of factors. It is a perfect square.
- The population of a town increased by 5% one year and by 15% the next year. To find the town's population after the 2 years, calculate the population after a 20% increase.
- An item is on sale for 20% off. The original price is 120% of the sale price.
- An item is on sale for 30% off and the taxes are 10%. To calculate the sale price, subtract 20%.
- You get the same purchase price whether you add the taxes and then take off the discount or take off the discount and then add the taxes.
- The price of an item is decreased by 25%. After a couple of weeks, it is increased by 25%. The final price is the same as the original price.

Number (cont'd)
- An athlete can run 1500 m in 6 minutes. She can run 15 km in 1 hour.
- When you add the same amount to both terms of a ratio, you get an equivalent ratio.
- In one school, three boys play sports for every four girls who play sports. There are exactly 80 boys who play sports.
- When you multiply two fractions, the product is less than either fraction.
- When you divide a whole number by a fraction, the quotient is greater than the whole number.
- When you multiply a fraction using thirds by a fraction using fourths, the answer is a fraction using twelfths.
- An integer multiplied by itself is positive.
- When you multiply two integers, the product is greater than either of the two integers.
- The product of any two integers is the same as the product of their opposites.
- When you compare two numbers, you know that the lesser number is closer to 0.

Patterns and Relations
- A relationship is linear. When you double the x, you double the y.
- When you add three consecutive numbers, your answer is a multiple of three.
- Chris solved the equation $3(x+4)=27$ by dividing by 3 and then subtracting 4. He could have done the same operations in a different order.

Shape and Space
- The sum of two square numbers is a square number.
- One side of a right triangle is 5 cm and another side is 12 cm. The third side is 13 cm.
- If a square and a rectangle have the same perimeter, the square has the smaller area.
- When you cut off a piece of a shape, you reduce its perimeter and area.
- A shape has an area of 9π. The shape is a circle.
- An object has a surface area of 20 m². Another object has a surface area of 24 m². The volume of the first object is smaller than the volume of the second object.
- When you double the length of a right rectangular prism, the surface area is doubled.
- When you double the length of a right rectangular prism, the volume is doubled.
- When you double the volume of a right rectangular prism, you double its surface area too.
- If you double all the dimensions of a triangular prism, you will double its surface area.
- If you double all the dimensions of a triangular prism, you will double its volume.
- Quadrilaterals tessellate.

Statistics and Probability
- A spinner has 3 sectors coloured red, blue, and yellow. The spinner is spun 3 times. The probability of landing on blue 3 times is $\dfrac{1}{27}$.

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