Set 1 - Algebra, Bakery:

(no calculator)

1. Views on the bakery's social media page have been growing rapidly. If on the first day, there were 3 views, and the views triple each day, how many views will there be on the sixth day?
    a. 729 views on the sixth day.
2. The equation for a sine wave, y=200sin(x), models the number of cookies sold across x number of weeks. If each cookie sold generates $3 and 25% of cookie revenue goes to expenses and other costs, what is the maximum profit that can be generated based on the model?
    a. $450 in profit
3. The number of new followers the Instagram page gains increases by 5 every day. If on the first day, there are 12 new followers, how many new followers will have joined by the 7th day?
    a. 42 followers
4. The puff pastry batter's layers double each time it is folded in half. To get to 128 layers, how many folds need to be made?
    a. 7 Folds
5. Sales for pumpkin pie decrease exponentially after the end of October. If the sales at the end of October were 300 pies, and the amount of pies sold is decreased by half every week, to the nearest whole number, how many pies would have been sold by November 21st?
    a. 38 pies

(calculator allowed)

6. The base of the rectangular donut boxes can be adjusted by size using the factor x. The area of the base is 2x^2 + 3x - 2 inches. If one side of the base box has a length of x+2, what will be the length of the other side of the base of the box if the base of the box has an area of 24 inches?
    a. 4.87 inches
7. To avoid getting the cylindrical shaped cookie stacks stuck in the boxes when customers want to open their packages, the base of the cylindrical stack must not be greater than any of the side lengths of the base of a cubical box. If the diagonal of the base of the box is 16 cm, then what maximum area can the base of the cylindrical stack have?
    a. 32pi cm or 100.53 cm
8. The equation y = 100sin(2π/12 (x-8))+150 predicts pumpkin cookie sales across the months of the year. If x =1 represents the sales in January, what is the predicted difference in pumpkin cookie sales between January and October? (provide a whole, positive number)
    a. About 37 cookies
9. Boxes for packaging baked goods have a volume that is represented by the equation x^3 + 5x^2 + 2x -8. If the height of one box is x+4 cm, what are the other two dimensions of the box if x is 10cm?

a. 12 cm and 9 cm

10. The line is filling up quickly. Every 3.5 seconds, 5 new people enter the line, and the line already started out with 10 people. After half a minute, how many people will be in the line?
    a. 50 people