Sum up the News – November 29th, 2016

Vocabulary

1. Event A has a probability of 0.6 and event B has a probability of 0.7. If the two events are independent then what is the probability that exactly one of them will occur.

    A. 0.42

    B. 0.46

    C. 0.58

    D. 0.65

2. Point P is between two vertical lines on the coordinate plane, the line M which has the equation x = 8 and the y-axis. If the point is reflected over line M and then reflected over the y-axis, then what will be the total transformation applied to point P?

    A. A reflection over y-axis and a translation of 8 units to the right.

    B. A rotation of 180° around the point (4, 0).

    C. A translation of 8 units to the left.

    D. A translation of 16 units to the left.

3. Rectangle FGHJ has an area of 36 sq. units. Point H is at (6, 8). The rectangle is dilated from the origin so that H' is located at (9, 12). What is area of rectangle F'G'H'J'?

    A. 54 square units

    B. 72 square units

    C. 81 square units

    D. 108 square units

Based on the article "Automakers driven to push electric cars" on page A8 of the Monday, November 21st, Seattle Times.

4. Currently, The Corporate Average Fuel Economy (CAFE) standards requires that the average fuel economy for the vehicles each car maker produces reach 42 miles per gallon by 2020 and 54.5 miles per gallon by 2025. Currently electric vehicles have an average fuel economy of 120 effective miles per gallon. Vehicles with combustion engines have an average fuel economy of 26 miles per gallon. If the average fuel economy of vehicles do not change, what fraction of vehicles sold will have to be electric in 2020?

    A. 17%

    B. 21%

    C. 27%

    D. 32%

5. Examine the graph titled "Lower prices for electric cars" on page A9. In 2011 about 1/3 of the cost of an electric car was due to its large battery. In the past 5 years the price of batteries has dropped by 65%. If the average price of electric cars remained constant from 2011 to 2013, then what fraction of car's price is now due to the battery?

    A. 1/9

    B. 1/7

    C. 2/9

    D. 1/2

6. Examine the graph titled "Lower prices for electric cars?" on page A9. Assume that the average price of an electric car is decreasing linearly. The auto industry expects to sell 18 million vehicles in 2020. If the auto makers sell just enough electric cars to comply with the CAFE standards, how big will the market be for electric cars in 2020?

    A. $70 billion

    B. $90 billion

    C. $110 billion

    D. $120 billion

Based on the article "Big batteries store solar power, give British farmers a brighter cash crop" on page A31 of the Thursday, November 27nd, Seattle Times.

7. Farmer Nicholas Beatty installed solar panels on 25 acres of his farm a couple years ago. Beatty's panels produce £650,000 each year in revenue. The long term price for energy in the UK has been hovering around £40 per MWh (Megawatt-hour) for years, but there are occasional jumps in the price when there are shortages. If Beatty has been receiving the typical price for his energy, how many MWh does each acre of his solar farm produce each year?

    A. 650 MWh per acre each year

    B. 1040 MWh per acre each year

    C. 16,250 MWh per acre each year

    D. 26,000 MWh per acre each year

8. Beatty recently added a battery to his solar farm to allow him to keep some of his energy off the market until prices rise. He spent $1 million on the battery, which is held in a 40 foot shipping container on the farm. Energy storage currently costs $500 per MWh. Recent power shortages in the UK have led to the electricity price there to jump from 40 pounds per MWh to 200 pounds per MWh for weeks at a time. How much more could Beatty make each time he sells all the energy from his fully charged battery?

    A. £80,000

    B. £160,000

    C. £320,000

    D. £400,000

9. Assume that Beatty's solar farm produces energy at a steady rate all year. How long does it take for the battery on Beatty's farm to reach capacity?

    A. 30 days

    B. 45 days

    C. 60 days

    D. 75 days

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