

Sum up the News – February 13th, 2017

Vocabulary

1. Two linear functions, $L(x)$ and $M(x)$, are graphed on the coordinate plane. A third function, $K(x)$ is equal to the ratio of $L(x)$ to $M(x)$. If $K(x)$ is undefined for $x = -7$, then which of the following are true?

A. $L(-7) = M(-7)$

B. $L(0) = -7$

C. $M(-7) = 0$

D. $M(0) = -7$

2. Water flows into a 100-gallon container at a constant rate. After 40 minutes, there are 15 gallons in the container. A pump turned on 1 hour later drains the water out of the container at a constant rate. If the container is empty 10 minutes after the pump starts, then at what rate does the pump remove water from the container?

A. 1.50 gallons per minute

B. 3.25 gallons per minute

C. 3.75 gallons per minute

D. 4.25 gallons per minute

3. Triangle FGH is obtuse and \overline{GM} is an altitude of the triangle. If angle G is the largest angle, then which of the following is true?

A. M is the midpoint of \overline{FH}

B. H lies on line segment \overline{FM}

C. \overline{FG} is the hypotenuse of FGM .

D. angle $GFM =$ angle FGM

Based on the article “Sewage dumped into Puget Sound” on page A1 of the Friday, February 10th, Seattle Times.

4. Heavy rains combined with a high tide last week to overwhelm a water treatment plant, leading to a large release of untreated water into the Puget Sound. Somewhere between 150 million gallons and 200 million gallons of water were released. The water

was mostly rainwater, but of it was wastewater from the sewer system. What is the range of possible values for the number of gallons of wastewater that were released?

- A. 5 million gallons
- B. 17.5 million gallons
- C. 50 million gallons
- D. 175 million gallons

5. The minimum amount of waste water that was released during this event is equal to one-fifth of the amount expected to be released into the Sound each year due to small overflows. As of February 10th, roughly one-ninth of the way through the year, how much waste water would normally have been released into the Puget Sound?

- A. 2.7 million gallons
- B. 8.3 million gallons
- C. 11.1 million gallons
- D. 13.2 million gallons

6. The untreated water is flowing out of a pipe that stretches three-quarters of a mile offshore and. The end of the pipe is 240 feet under water. How long would a rope have to be to stretch from the shore's edge to the end of the pipe that is releasing the waste water?

- A. 790 feet
- B. 2100 feet
- C. 3970 feet
- D. 15,700 feet

Based on the article “Dutch get creative to solve prison problem: too many empty cells” on page A3 of the Friday, February 10th, Seattle Times.

7. Falling crime rates have led the Netherlands to close nearly a third of their prisons and to lease others to nearby countries. 5 years ago, Belgium leased spaced for 500 prisoners. Two years ago, Norway paid the Netherlands \$27 million to house 242 prisoners for three years. If the annual rent The Netherlands charged for a cell had increased by 10% in the years between Belgium's lease and Norway's, then how much did Belgium pay to house one prisoner for one year?

- A. \$22,400
- B. \$33,800
- C. \$40,900
- D. \$16,500,000

8. Even before the falling crime rates, the Netherlands kept far fewer people in prison than the U.S. Now it keeps just 61 of every 100,000 of its citizens in prison, compared to 666 of every 100,000 for the U.S. The Netherlands has a population that is just 5.3% of the population of the US. They have approximately 10,250 of their citizens in prison. Roughly how many of its citizens does the United States keep in prison?

- A. 120,000
- B. 870,000
- C. 2,100,000
- D. 3,400,000

Based on the article “Solo driving? It has dropped to 30 percent for the quarter-million people working in Seattle’s core.” on page A1 of the Thursday, February 9th, Seattle Times.

9. Central city commuters from Everett need to leave 92 minutes before to ensure that they make it there on time. The average trip take just 56 minutes to cover the 26.8 miles from Everett to downtown Seattle. How much faster do commuters travel on average days than they do during the days with the slowest commutes?

- A. 11.2 miles per hour faster
- B. 17.5 miles per hour faster
- C. 28.7 miles per hour faster
- D. 44.7 miles per hour faster

10. Examine the graph titled “Shifting the commute” on page A1. The total number of commuters has grown at a constant rate since 2010. Approximately how many Used transit to commute to work in 2014?

- A. 97,000

- B. 101,000
- C. 104,000
- D. 109,000

11. Examine the graph titled “Shifting the commute” on page A1. People moving to the area for jobs are less likely to drive alone to work. If just 20% of commuters new to the area over the past 6 years use single-occupancy vehicles to commute, then what percentage of existing commuters switched away from using single occupancy vehicles over the 6-year period?

- A. 6.7%
- B. 8.8%
- C. 9.2%
- D. 11.4%

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