

Sum up the News – February 27th, 2017

Vocabulary

1. If y is inversely related to the square of x , then which of the following equations could represent their relationship?

A. $y = \frac{5}{x^2 + x}$

B. $y^2 = \frac{5}{x}$

C. $y = 5x^2$

D. $y = 5x^{-2}$

2. The graph of $f(x)$ is a downward facing parabola with x -intercepts at -2 and 5 . Another function $g(x) = \frac{3}{\sqrt{f(x)}}$. For which values of x will $g(x)$ produce real answers?

A. $x > 0$

B. $-2 > x > 5$

C. $-2 \geq x \geq 5$

D. $x < -2$ and $x > 5$

3. Two circles share the same center and the larger one has an area 12π greater than the other. If the larger circle has a radius of R , which of the following inequalities describes the possible values of R .

A. $R < 12\pi$

B. $R < 3\sqrt{2}$

C. $R > 2\sqrt{3}$

D. $R > 12$

Based on the article “Free trip planner for pedestrians warns about hills, construction” on page B1 of the Monday, February 20th, Seattle Times.

4. A project at the University of Washington has produced a map and route planner for pedestrians, to help them find the most accessible routes. One user switched from a following a 9-block route to the post office to a 13-block route. The new route is longer but the change in elevation is more evenly spread out, making the trip easier. The shorter route included a steep hill at an 8.3% grade, the maximum allowable grade under state regulations. The new route’s steepest hill has just a 4% grade. The grade of a hill is equal to the gain in altitude as a percentage of the horizontal distance covered. If the city blocks on both routes have an average length of 400 feet and along the 13-block route they have an average uphill grade of 2.5%, then besides the block with the steep hill, what is the average grade along the rest of the 9-block route?

- A. 3.0%
- B. 3.6%
- C. 4.1%
- D. 5.3%

5. The steepest recommended angle of elevation for pedestrian access is 3.56° . How much steeper is the angle of the maximum allowable grade than the recommended grade?

- A. $\frac{1}{2}$ degree steeper
- B. 1 degree steeper
- C. 2 degrees steeper
- D. 4 degrees steeper

Based on the article “Bad harvest in Italy yields olive-oil sticker shock” on page A9 of the Wednesday, February 22nd, Seattle Times.

6. Bad weather and insects took their toll on the olive harvest this winter. Olive oil production shortages have led to large increases in prices. A 64% increase in the wholesale price has increased the sale prices of olive oil by 20%. What percent of the sale price is the wholesale price now?

- A. 31%
- B. 38%
- C. 43%
- D. 51%

7. Italians consume a disproportionate amount of the world's olive oil. Italy has just 0.8% of the world's population but consumes 20% of the olive oil. Olive oil consumption has doubled in the US over the past decade but even with 4.3% of the world's populations, the U.S. consumes just 10% of the olive oil. How much more olive oil do typical Italians consume than typical Americans?

- A. 2 times more
- B. 5 times more
- C. 10 times more
- D. 20 times more

Based on the article “7 Earth-size planets that could harbor life found in orbit around star” on page A1 of the Thursday, February 23rd, Seattle Times.

8. A recently discovered star, Trappist-1, is just 40 light years from Earth has seven Earth-sized planets, several of which orbit in the star's habitable zone. The habitable zone is a range of distances from the star where the temperatures would be suitable for liquid water to exist on planet surfaces and the distances are based on the stars' temperature and brightness. Trappist-1 is classified as an ultracool dwarf star and has a surface temperature of just 2550 Kelvin, much cooler than our sun's surface temperature of 5778 Kelvin. It's also far less bright, as our sun is approximately 2000 times brighter. A star's luminosity, how bright it is, is dependent upon its temperature and its radius. Two star's luminosities can be compared based on their relative temperature and radii. Given a relative radius of R and surface temperature of T , a star's relative luminosity, L , can be found with the equation:

$$L = R^2 T^4$$

Compared to the radius of the Earth's sun, what is the radius of Trappist-1?

- A. 4% of the radius of the Earth's sun
- B. 11% of the radius of the Earth's sun
- C. 13% of the radius of the Earth's sun
- D. 22% of the radius of the Earth's sun

9. Despite being so much smaller, Trappist-1 is still incredibly massive, roughly one twelfth as massive as our sun. Density is equal to mass divided by volume. How much denser is Trappist-1 than our sun? (Volume of a sphere with a radius of r : $V = \frac{4}{3}\pi r^3$)

- A. 7 times more dense
- B. 20 times more dense
- C. *60 times more dense*
- D. 300 times more dense

Sum Up the News is posted to the Web on Tuesdays. Please share the NIE program with other teachers. To sign-up for the electronic edition of the newspaper please call 206/652-6290 or toll-free 1-888/775-2655.

Copyright © 2017 The Seattle Times Company