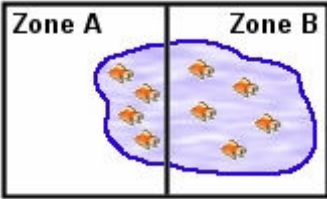


Ivy Bound SAT Prep

Sample Math Questions

Questions 1 - 8. Which of the following is greater, Column A or Column B?
 Choose A if Column A is greater.
 Choose B if Column B is greater.
 Choose C if both values are equal.
 Choose D if it cannot be determined.

	<u>A</u>	<u>B</u>
1) x is an integer less than -1	$(x^5)^2$	x^7
2) $P > 1$	$(P)^P$	$P^3 - P$
3) $0 < n < 1$	$\frac{1}{n}$	n^3
4) $a < 0, b > 0$	ab	$a + b$
5) c is an odd number d is an even number $0 < c < d$	$\frac{c}{c} + d$	$\frac{d}{d} - \frac{c}{c}$
6)		<p>The ratio of fish in Zone A to fish in Zone B</p> $\frac{100}{80}$
7) Six Students take Test Q	<p>The average (mean) of six students' scores on Test Q</p>	<p>The fourth highest score on Test Q</p>
8)	$\pi \sqrt{125}$	$\frac{45\sqrt{5}}{3}$

9) Fawn lives on a hill. She goes to work by bicycle at an average speed of 20 miles an hour. Work is 10 miles away. She returns home at average speed of 15 miles per hour along the same 10 mile route. How long does she spend commuting each day?

- A) 30 minutes
- B) 35 minutes
- C) 40 minutes
- D) 60 minutes
- E) 70 minutes

10) Two legs of a right triangle measure 4 and 8 cm. What is a possible measure of the third leg?

- A) $6\sqrt{3}$ cm
- B) $4\sqrt{3}$ cm
- C) 6 cm
- D) $\sqrt{32}$ cm
- E) $6\sqrt{2}$ cm

Answers to the Math Questions

1) A 2) D 3) A 4) D 5) A 6) B 7) D 8) A 9) E 10) B

Explanation of Answers

1) A. When x is negative if you raise it to an odd power, the answer will be negative because all odd multiples of a negative number remain odd. Column A) will yield a positive answer for every x , because a negative number to the 10th power goes positive. So Positive beats negative, and Column A wins.

2) D. At some point the power of a high exponent will overwhelm the power of a low exponent. When $p = 2$, Column A is 4 and Column B is 6. But when $p = 10$, Column A is HUGE (10,000,000,000 or ten billion) while Column B is 1000 - 10 or 990.

3) A. Recognize what happens in Column A with a fraction in the denominator: after we invert and multiply, the result will be GREATER THAN 1. Recognize that in Column B a fraction times itself remains a fraction. Indeed it goes lower. Multiplying the fraction by itself another time takes it lower still. Thus Column B must be less than 1.

4) D. A negative times a positive is negative. So Column A MUST be Negative. Column B COULD be negative if a is very low and b is close to 1. With $a = -10$ and $b = 1/2$, $ab = -5$ and $a + b = -9.5$, so Column A is higher. With $a = -10$ and $b = 10$, $ab = -100$ and $a + b = 0$. Thus we have discrepant results and D) is the answer.

5) A. Any number over itself (divided by itself) is 1. So in Column A we have 1 plus an even positive number. In Column B we have $1 - 1$, which is always 0. Even with fractions for variables, this works.

6) B. Ratios express parts to wholes. As a fraction, the denominator is the second part. Here the ratio of fish in Zone A to Zone B is 4 to 5, or $4/5$. This is less than 1. $100/80$ is above 1, so B exceeds A.

7) D. Even if the question specified the "mean" average, there is still a definiteness problem. Unless the 4th highest score IS the median, the mean will be different, the mode will be different, and the median will be different.

If the scores are 48, 49, 50, 50, 51, 52, then the mean and the 4th highest are both 50.

If the scores are 100,100,100, 0, 0, 0, then the mean is 50 and the 4th highest is 0.

8) A. Approximate or calculate. Pi times something around 11 (root125 is a bit more than root121) result in approximately 35. Meanwhile, 15 times root5 is a bit more than 35.