PRACTICE QUESTIONS

Directions: In the following questions, note the given information, if any, and then compare the quantity in Column A to the quantity in Column B. Next to the number of each question, select

(A) if the quantity in Column A is greater
(B) if the quantity in Column B is greater
(C) if the two quantities are equal
(D) if the relationship cannot be determined from the information given

	Column A	Column B
	$x < 0$	
1.	x	x^2
	$a > b > c > 0$	
2.	$a - c$	$b - c$
3.	$4x + 5$	$5x$
4.	$\sqrt{10} + \sqrt{65}$	$3 + 8$
5.	52% of 34	17
6.	0.76	$\frac{3}{4}$
	$0 < x < 1$	
7.	$3x$	$2x$
8.	x	$x - 1$
9.	x	$-x$

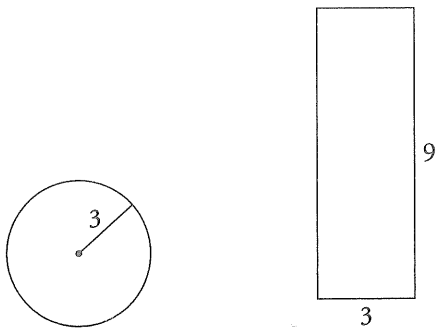
	Column A	Column B
10.	$\frac{1}{8} + \frac{1}{10}$	$\frac{1}{9} + \frac{1}{11}$
11.	50×8.01	$\frac{801}{2}$
12.	$\frac{(-2)(-4)}{(-6)(-8)}$	$\frac{(-6)(-8)}{(-4)(-12)(-12)}$
13.	-2	-1
	$14 < x < 16$ $18 < y < 20$	
14.	34	$x + y$
15.	$748 + 749 + 750 + 751 + 752$	$5(750)$
	$x > 0$	
16.	$\frac{99x}{100}$	$\frac{100}{99x}$

The product of two integers is 10.

	Column A	Column B
17.	6	The sum of the whole numbers
18.	19(56) + 44(19)	1,901

$AC = BD$

	Column A	Column B
19.	AB	BC



	Column A	Column B
20.	The area of the circle	The area of the rectangle
21.	The average of 106, 117, 123, and 195	The average of 110, 118, 124, and 196

$2x - 6 = 2x + 3x$

	Column A	Column B
22.	x^2	4

$x > 0$
$y > 0$

	Column A	Column B
23.	$x - y$	$y - x$

$x \neq 0$

	Column A	Column B
24.	$\dfrac{x+2}{3}$	$x + 5$

x is an even integer.

	Column A	Column B
25.	x^2	x^3
26.	$\dfrac{6+\sqrt{3}}{2}$	$\dfrac{3+\sqrt{6}}{\sqrt{4}}$
27.	$6 + 10$	$\sqrt{16} + \sqrt{36}$
28.	25% of 65	$65 \times \sqrt{\dfrac{1}{4}}$

$a > b > c > d$

	Column A	Column B
29.	$a^2 + c$	$b^2 + d$

PRACTICE QUESTION ANSWERS

1. B

Since x is negative, Column A is negative. But because a negative number squared is positive, Column B is positive and therefore greater than Column A.

2. A

Add c to both columns and you end up comparing a and b. The centered information tells you straight out that a is greater.

3. D

If you tried to do this one by Picking Numbers and all you picked were small integers like 1, 2, or 3, you'd think the answer was (A). Try taking a value for x that's greater than 5. When $x = 6$, for example, Column A is 29 and Column B is 30. More than one relationship is possible, so the answer is (D).

4. A

Compare piece by piece. You know that $\sqrt{9}$ is 3, so $\sqrt{10}$ is more than 3. By similar reasoning, you know that $\sqrt{65}$ is more than 8. Each piece of Column A is greater than the corresponding piece of Column B, so the sum of the pieces in Column A will be greater than the sum of the pieces in Column B.

5. A

Don't calculate. Compare Column A to a percent of 34 that's easy to find. Think of 52% as just a bit more than 50%, or $\frac{1}{2}$. 52% of 34, then, is just a bit more than half of 34, so it's more than 17.

6. A

If you know your standard fraction-decimal equivalents, you know that $\frac{3}{4}$ is the same as 0.75, which is less than 0.76.

7. A

Tripling x doesn't necessarily give you more than doubling x, but it does when x is positive, as is the case here.

8. A

Subtract x from both columns to get 0 in Column A and -1 in Column B. Column A is greater.

9. D

At first glance, you might think that x is greater than $-x$ because a positive is greater than a negative, but nothing says that x has to be positive or that $-x$ has to be negative. If x is negative to start with, then $-x$ is positive, and the relationship is reversed. And if $x = 0$, the columns are equal, so the answer is (D).

10. A

Don't calculate; compare piece by piece. The first fraction in Column A is greater than the first fraction in Column B, and the second fraction in Column A is greater than the second fraction in Column B. Therefore, the sum in Column A is also greater.

11. C

Multiply both columns by 2 and you end up with 100×8.01, or 801, in Column A, and you also end up with 801 in Column B.

12. A

Just look at the number of negative signs in each column, use what you know about numbers, and you won't have to evaluate the two expressions. In Column A, you have a positive over a positive, which is positive, and in Column B you have a positive over a negative, which is negative. There's no need to calculate to see that Column A is greater.

13. B

-1 is further to the right on the number line than -2, so -1 is greater.

14. D

Use what you know about x and y to figure out the greatest and least possible values of $x + y$. Don't assume that x and y are integers. That would make $x = 15$ and $y = 19$, and then the columns would be equal. But x might be less than 15, perhaps 14.5, and y might less than 19, perhaps 18.5. In that case, Column A would be greater. (It's also possible for $x + y$ to be *greater* than 34.) More than one relationship is possible, so the answer is (D).

15. C

There's no need to calculate. The sum of the five consecutive integers in Column A will be simply 5 times the middle number, exactly what you have in Column B.

16. D

These two quantities are reciprocals, so when Column A is greater than 1, Column B is less than 1, and vice versa. Column A will be greater than 1, and consequently greater than Column B, when $99x$ is greater than 100—in other words, when x is greater than $\frac{100}{99}$. On the other hand, Column A will be less than 1, and consequently less than Column B, when x is *less* than $\frac{100}{99}$. And, of course, the columns will be equal when $x = \frac{100}{99}$. More than one relationship is possible, so the answer is (D).

17. D

There are several pairs of integers that have a product of 10. You don't need to find every pair. Just try to find a pair that has a sum greater than 6 (like 5 and 2) and another pair that has a sum less than 6 (like -5 and -2). Since more than one relationship is possible, the answer is (D).

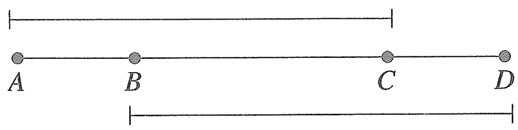
18. B

Note that if you factor 19 out of Column A, you end up with 19 times 100, which is 1 less than 1,901.
$19(56) + 44(19) = 19(56 + 44) = 19(100) = 1{,}900$.
Column B is larger.

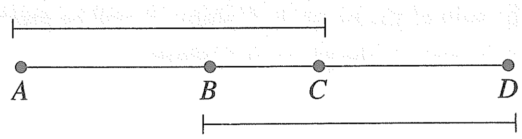
19. D

It looks at first glance like B and C divide the segment into three equal pieces. But check the mathematics of the situation to be sure. You're given that $AC = BD$:

What can you deduce from that? You can subtract BC from both equal lengths, and you'll end up with another equality: $AB = CD$. But what about BC? Does it have to be the same as AB and CD? No. The diagram could be resketched like this:



Now you can see that it's possible for AC and BD to be equal but for BC to be longer than AB. It's also possible for BC to be shorter:



More than one relationship is possible, so the answer is (D).

20. A

The area of the circle is $\pi r^2 = \pi(3)^2 = 9\pi$. The area of the rectangle is 9×3. Don't think of it as 27; it's easier to compare in the form 9×3. π is more than 3, so 9π is more than 9×3.

21. B

Compare piece by piece. The corresponding numbers in Column B are greater than those in Column A. Therefore, the average in Column B must be greater.

22. C

Solve for x in the centered equation. First, subtract $2x$ from both sides. This will leave you with $-6 = 3x$. Divide both sides by 3. Now, $x = -2$. Plug in -2 for x to find the value of x^2 in Column A: $x^2 = (-2)^2 = 4$. The quantities in both columns are equal.

23. D

From the centered information, you know only that the variables x and y must be positive. So plug in some positive integers. If $x = 5$ and $y = 3$, then Column A is $x - y = 5 - 3 = 2$ and Column B is $y - x = 3 - 5 = -2$. In this case, Column A is greater. Now plug in some different numbers. Notice that you have not been given any information about the relationship between x and y. If you were to switch the values that you used on the first try, so that $x = 3$ and $y = 5$, then Column A is $x - y = 3 - 5 = -2$ and Column B is $y - x = 5 - 3 = 2$. Column B is greater. Since more than one relationship between the columns is possible, choice (D) is correct.

24. D

This problem appears to be an obvious candidate for the Picking Numbers strategy. But be careful with the numbers you choose. Let's plug in 2 for x. Column A is $\frac{2+2}{3}$, or $\frac{4}{3}$, and Column B is $2 + 5$, or 7. Column B is greater. Your next likely step would be to switch your plug-in number from a positive to a negative. Here's where the test makers will mislead you if you aren't careful. By letting $x = -2$, you find that Column A is $\frac{-2+2}{3}$, or 0, while Column B is $-2 + 5$, or 3. Once again, Column B is greater. But what happens if you plug in a negative number considerably farther away from 0? If $x = -100$, then Column A is $\frac{-100+2}{3} = \frac{-98}{3}$, or $-32\frac{2}{3}$, and Column B is $-100 + 5$, or -95. In this case, Column A is greater. More than one relationship between the columns is possible.

25. D

This is another Picking Numbers type of problem. Let's begin by plugging in a positive value for x that is consistent with the centered information. Let $x = 2$. So Column A is $2^2 = 2 \times 2$, or 4, and Column B is $2^3 = 2 \times 2 \times 2$, or 8. In this case, Column B is greater. Now pick a negative value for x that is consistent with the centered information. Let $x = -2$. Now, Column A is $(-2)^2 = (-2) \times (-2) = 4$ and Column B is $(-2)^3 = (-2) \times (-2) \times (-2) = -8$. Column A is greater. Since more than one relationship between the columns is possible, (D) is correct.

26. A

While it is true that every positive number has two square roots—a positive and a negative square root—the convention with the symbol $\sqrt{\ }$ is that if x is positive, $\sqrt{x}$ means the positive square root of x. For example, 16 has the two square roots, 4 and -4, while $\sqrt{16}$ means the positive square root of 16, which is 4. Thus, $\sqrt{16} = 4$.

First, notice that the denominator $\sqrt{4}$ of Column B is equal to 2. So we're comparing $\frac{6+\sqrt{3}}{2}$ in Column A with $\frac{3+\sqrt{6}}{2}$ in Column B. Now try doing the same thing to both columns. Multiplying both columns by 2 leaves us with $6 + \sqrt{3}$ for Column A and $3 + \sqrt{6}$ for Column B. Next, subtracting 3 from both columns leaves us with $3 + \sqrt{3}$ for Column A and $\sqrt{6}$ for Column B. Now $3 = \sqrt{9}$ and $\sqrt{9}$ is greater than $\sqrt{6}$. So 3 is greater than $\sqrt{6}$. Surely $3 + \sqrt{3}$ (which is what we now have for Column A) is greater than 3. Also, 3 is greater than $\sqrt{6}$, with $\sqrt{6}$ being what we have for Column B. So $3 + \sqrt{3}$ for Column A must be greater than $\sqrt{6}$ for Column B. Choice (A) is correct.

27. A

Just as we saw in the previous question, if x is positive, that means $\sqrt{x}$ is the positive square root of x. In Column A, $6 + 10 = 16$. In Column B, we have $\sqrt{16} + \sqrt{36}$. By convention, $\sqrt{16} = 4$ and $\sqrt{36} = 6$. So $\sqrt{16} + \sqrt{36} = 4 + 6 = 10$. Column A is greater.

28. B

Change one of the columns so you can make a direct comparison. A percentage can be written as a fraction and vice versa. It's generally easier to work with fractions, so convert 25% in Column A to a fraction. The fractional equivalent of 25% is $\frac{1}{4}$. (You convert a percent to a fraction (or decimal) by dividing the percent by 100%, so $25\% = \frac{25\%}{100\%} = \frac{25}{100} = \frac{1}{4}$.)

Therefore, Column A is $\frac{1}{4}$ of 65, or $\frac{65}{4}$. Column B is $65 \times \sqrt{\frac{1}{4}}$. Let's first simplify $\sqrt{\frac{1}{4}} \cdot \sqrt{\frac{1}{4}} = \frac{\sqrt{1}}{\sqrt{4}} = \frac{1}{2}$. So Column B is $65 \times \frac{1}{2}$, or $\frac{65}{2}$. Since $\frac{65}{2}$ is greater than $\frac{65}{4}$, Column B is greater.

29. D

Since the variables could be positive or negative, pick different kinds of numbers for the variables to see if different relationships between the columns are possible. Remember that the values you pick must be consistent with the centered information, which is that $a > b > c > d$.

If $a = 4$, $b = 3$, $c = 2$, and $d = 1$, then the value of Column A is $a^2 + c = 4^2 + 2 = 16 + 2 = 18$, and the value of Column B is $b^2 + d = 3^2 + 1 = 9 + 1 = 10$. Column A is greater. If you pick only positive numbers, then it will always be true that $a^2 + c > b^2 + d$. You could fall for the trap here of thinking that $a^2 + c$ is always greater than $b^2 + d$ if you don't let some or all of the variables be negative. Let $a = -1$, $b = -2$, $c = -3$, and $d = -4$. These values are consistent with the centered information. This time the value of Column A is $a^2 + c = (-1)^2 + (-3) = 1 - 3 = -2$, and the value of Column B is $b^2 + d = (-2)^2 + (-4) = 4 - 4 = 0$. So in this case, Column B is greater. More than one relationship between the columns is possible.