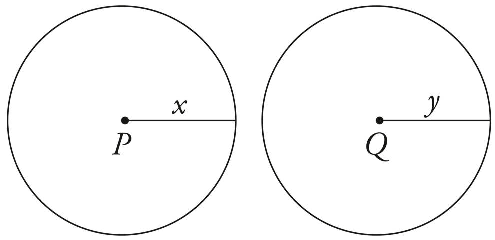
PRACTICE DRILL 9—QUANT COMP (MIDDLE AND UPPER LEVELS ONLY)

Do this drill in three parts. Questions 1–11, 12–28, and 29–45. When you're done with each set, check your progress in Chapter 17. Don't forget to time yourself!

(A) means that column A is always greater
(B) means that column B is always greater
(C) means that column A is always equal to column B
(D) means that A, B, or C are not always true

	Column A	Column B
1.	The total cost of 3 plants that cost \$4 each	The total cost of 4 plants that cost \$3 each
2.	$30(1 - 2n)$	$30 - 2n$
	The product of 3 integers is 48.	
3.	The smallest of the 3 integers	1
4.	$(x + y)(x - y)$	$x^2 - y^2$
5.	$(7 - 4) \times 3 - 3$	0
	Line m is the graph of $y = x + 4$.	
6.	Slope of line m	Slope of line l that is perpendicular to line m
	The price of a pair of shoes is \$100. The price is increased by 20%. Nobody buys it, so the price is then reduced by 20%.	
7.	The final price of the pair of shoes after reductions	\$100
8.	$\left(-\frac{5}{6}\right)^3$	$\left(-\frac{5}{6}\right)^5$
9.	$\left(\frac{5}{6}\right)^4$	$\left(\frac{5}{6}\right)^6$
10.	$\left(-\frac{5}{6}\right)^2$	$\left(-\frac{5}{6}\right)^4$

11.	$\left(\frac{5}{6}\right)^3$	$\left(\frac{5}{6}\right)^5$



Note: Figure not drawn to scale.

12.	Circumference of Circle *P*	Area of Circle *Q*

A 6-sided number die, numbered 1 to 6, is rolled.

13.	Probability that the number rolled is prime.	$\frac{3}{6}$

a and b are integers.

$a + b = 5$

14.	a	b
15.	$\sqrt{25-9}$	$\sqrt{25} - \sqrt{9}$

Set A: {all prime numbers}

Set B: {all positive multiples of 5 less than 50}

Set C: intersection of Sets A and B

16.	Number of elements in Set C	1
17.	$\frac{3}{4} \times \frac{3}{4}$	$\frac{3}{4} + \frac{3}{4}$

$a > 0$

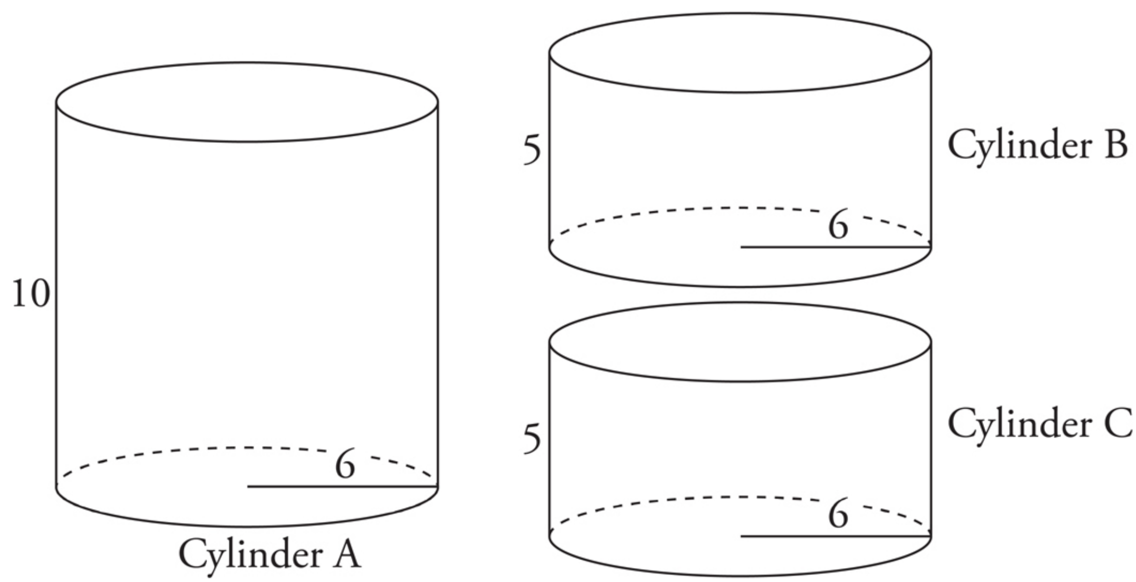
$b < 0$

18.	$-(ab)$	$-ab$

Set A: {1, 3, 8, 11, 15}

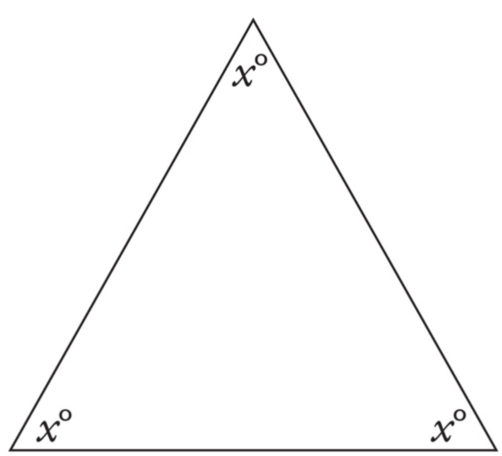
Set B: {2, 4, 8, 9, 10, 20}

19.	Median of Set A	Median of Set B
20.	Sum of all consecutive integers between 1 and 10, inclusive	5(11)
21.	$2^3 + 2^3 + 2^3$	2^9
22.	$7(x - 3)$	$21 - 7x$
23.	The smallest positive factor of 25 multiplied by the biggest positive factor of 16	40
24.	Probability of a fair penny having heads face up on two consecutive flips	Probability of a fair penny having heads face up on three consecutive flips



Note: Volume of a right cylinder: $V = \pi r^2 h$

25.	Volume of Cylinder A	Total Volume of Cylinders B and C



26.	x	60
27.	The percent increase from 1 to 2	The percent decrease from 2 to 1
28.	The average (arithmetic mean) of 4, 6, 8, and 10	The median of 4, 6, 8, and 10

$$x > 0$$

$$y > 0$$

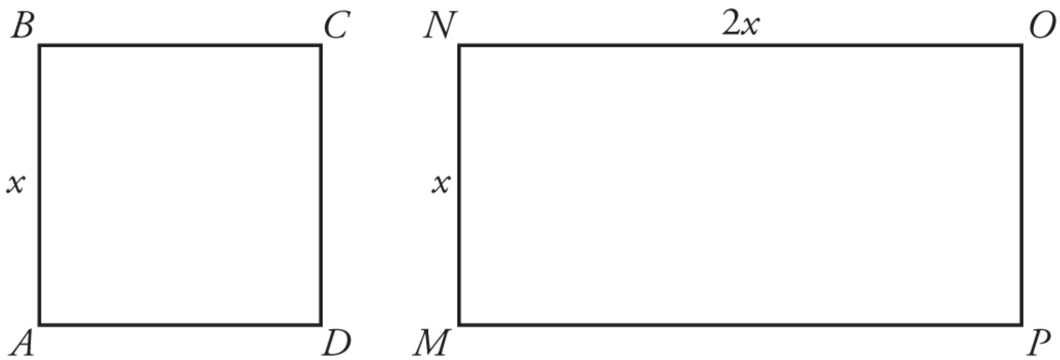
29.	$\frac{xy}{2}$	$\sqrt{xy}$
30.	(567.83) (0.40)	(40) (5.6783)

Meredith has 7 pairs of purple shoes, 2 pairs of red shoes, and 1 pair of white shoes. She chooses one pair of shoes at random.

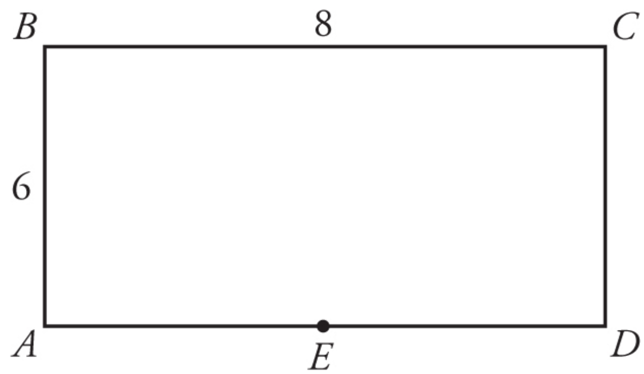
31.	Probability of <u>not</u> picking a red pair of shoes	$\frac{8}{10}$
32.	Total cost of 10 shirts at \$8 each	Total cost of 20 shirts at \$4.50 each
33.	$\frac{x^2x^5}{x^4}$	x^3

$$x^2 = 36$$

34.	x	-6
35.	Largest positive factor of 16	Smallest positive multiple of 16



36.	Perimeter of square $ABCD$	Perimeter of rectangle $MNOP$



E is the midpoint of side AD.

37.	Area of ΔBDE	12
38.	4^{12}	64^4

A hat contains blue and red tickets.
The ratio of blue tickets to red tickets is 3:5.

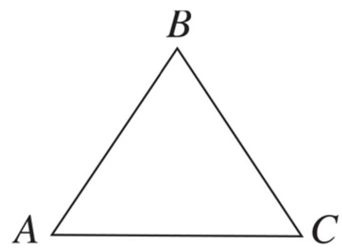
39.	$\frac{3}{5}$	The fractional part of all the tickets in the hat that are blue

Luke travels from Providence to Boston at an average speed of 50 miles per hour without stopping. He returns to Providence along the same route at an average speed of 60 miles per hour without stopping.

40.	Luke's average speed for the entire trip	55 miles per hour
41.	The slope of the line $12x - 4y = 16$	The slope of the line containing points $(-3, 6)$ and $(3, 12)$
42.	$\sqrt{0.81}$	$\sqrt{8.1}$

A rectangle with sides y and z has an area of 36.

43.	The length of y	The length of z
44.	The number of nonnegative even integers less than 10	4



Triangle ABC is isosceles.
$BC = 2$

Note: Figure not drawn to scale.

45.	The area of triangle ABC	4

Practice Drill 9—Quant Comp

1. **C**

   Find the total cost in each of the columns. Column A contains the statement *The total cost of 3 plants that cost \$4 each*, so 3(\$4) = \$12. Column B contains the statement *The total cost of 4 plants that cost \$3 each*, so 4(\$3) = \$12. The columns are equal, so the correct answer is (C).

2. **D**

   First, simplify the expression in column A. Distribute the 30 in the expression $30(1 - 2n)$ to get $30 - 60n$. Now, plug in a value for n to solve each column. Let $n = 2$. In column A, $30 - 60(2) = -90$. In column B, $30 - 2(2) = 26$. Column B is greater, so eliminate (A) and (C). Now, plug in a second time, trying a different number (remember, try 1, 0, fractions/decimals, negatives, or large or small numbers to find different outcomes). Try a negative number here. Let $n = -3$. Column A will now read $30 - 60(-3) = 210$, and column B will read $30 - 2(-3) = 36$. Column A is greater in this case. Since neither column is always greater, the correct answer is (D).

3. **D**

   You are given the statement The *product of 3 integers is 48*. There are many ways to reach a product of 48. For instance, $2 \times 3 \times 8 = 48$. Of the three integers, the smallest is 2, so column A is 2. Compared to column B, column A is greater. Eliminate (B) and (C). However, this is not the only way to multiply integers to get a product of 48. For example, $1 \times 2 \times 24 = 48$. In this case, the smallest of the three integers is 1, which means the two columns are equal. Since column A is not always greater nor are the two columns always equal, the correct answer is (D).

4. **C**

   First, simplify column A: $(x + y)(x - y)$ can be FOILed out to be $x^2 + xy - xy - y^2$. The two middle values cancel each other out, so the expression reads $x^2 - y^2$, which is the same as the expression in column B. Since the two columns are equal, the correct answer is (C). Note that you can also plug in values for x and y and solve the problem this way. You should try more than one set of numbers to check for other possible outcomes.

5. **A**

   Use correct PEMDAS to evaluate the expression in column A. First, work within the parentheses: $(7 - 4) \times 3 - 3 = (3) \times 3 - 3$. There are no exponents, so the next step is to do the multiplication and division from left to right: $(3) \times 3 - 3 = 9 - 3$. Finally, add and subtract from left to right: $9 - 3 = 6$. Since 6 is greater than 0, column A is greater. The correct answer is (A).

6. **A**

   Since line m is equal to $y = x + 4$, the slope of line m is equal to 1. Remember, the slope is the coefficient of x in linear equations. Therefore, column A is 1. Perpendicular lines will have slopes that are negative reciprocals of one another. Therefore, line l, which is perpendicular to line *m*, will have a slope of—1 since the negative reciprocal of $\frac{1}{1}$ is $-\frac{1}{1}$. Thus, column B is –1. Since 1 is greater than –1, column A is greater. The correct answer is (A).

7. **B**

Work through the information provided to find the value of column A. If the shoes are $100 and *the price is increased by 20%*, find 20% of $100 and add that result to the total. $\frac{20}{100}(100)$ reduces to $\frac{1}{5}(100) = \frac{100}{5} = 20$. The price increased $20, so $100 + $20 = $120. The shoes are now $120. However, *the price was reduced by 20%*. Find 20% of 120 and subtract that result from the total. $\frac{20}{100}(120)$ reduces to $\frac{1}{5}(120) = \frac{120}{5} = 24$. The price decreased $24, so $120 – $24 = $96. The final price of the shoes is $96, so column A is $96. Since column B is $100, it is greater. The correct answer is (B).

8. **B**

Remember, a negative sign will stay negative with an odd exponent. Both columns contain negative numbers and odd exponents, so both columns will remain negative. With negative numbers, the value that is *closer to* zero will be the greater value (e.g., –1 > –4). When working with fractions, remember that as the denominator gets larger, the fraction will get smaller (e.g., $\frac{1}{2} > \frac{1}{4}$). However, with negative fractions, the one that is “less negative” will be greater (e.g., $-\frac{1}{4} > -\frac{1}{2}$). In column B, the exponent is greater, so the denominator in column B will be larger and thus the value of the fraction will be smaller. Since the fraction in column B will be less negative than the fraction in column A, the value in column B is greater. The correct answer is (B).

9. **A**

Both fractions are positive and both are being raised to a positive, even power. However, be careful when working with fractions less than 1. When those numbers are raised to a positive power, they become smaller since the denominator increases. Remember, as the denominator gets larger, the fraction will get smaller (e.g., $\frac{1}{2} > \frac{1}{4}$). Thus, the denominator in column A (6^4) will be smaller than the denominator in column B (6^6), which means the value in column A will be greater. The correct answer is (A).

10. **A**

The negative sign in both columns will become positive since both columns are being raised to an even power. With fractions less than 1, the larger the denominator, the smaller the fraction. Since the denominator in column A (6^2) will be smaller than the denominator in column B (6^4), the value in column A will be greater. The correct answer is (A).

11. **A**

With fractions less than 1, the larger the denominator, the smaller the fraction. Since the denominator in column A (6^3) will be smaller than the denominator in column B (6^5), the value in column A will be greater. The correct answer is (A).

12. **D**

There are no instructions as to the values of x and y, so use Plugging In. For instance, x and y could be equal. Let both x and y equal 4. Column A would be $C = 2(4)\pi$, or 8π, and column B would be $A = \pi(4)^2 = 16\pi$. In this case, column B is greater, so eliminate (A) and (C). Since x and y do not have to be equal, plug in a second time to see if a different outcome is possible. Say that $x = 2$ and $y = 1$. Then column A will be $C = 2(2)\pi = 4\pi$, and column B will be $A = \pi(1)^2 = \pi$. Now, column A is greater. Since neither column is always greater, the correct answer is (D).

13. **C**

List the prime numbers on the 6-sided die: 2, 3, and 5 (Note! 1 is not a prime number). Since there are 6 sides on the die, the probability of rolling a prime number is $\frac{3}{6}$, so column A is $\frac{3}{6}$. This is the same value listed in column B. Since the columns are equal, the correct answer is (C).

14. **D**

Since there are variables in the columns, plug in values for a and b. If a and b are integers and $a + b = 5$, choose numbers to make both statements true. Let $a = 3$ and $b = 2$. In this case, column A is greater, so eliminate (B) and (C). However, these numbers could easily be reversed because there are no restrictions listed. If $a = 2$ and $b = 3$, then column B would be greater. Since neither column is always greater, the correct answer is (D).

15. **A**

Evaluate the expressions, using order of operations. Column A is $\sqrt{25-9} = \sqrt{16} = 4$, and column B is $\sqrt{25} - \sqrt{9} = 5 - 3 = 2$. Therefore, column A is greater. The correct answer is (A).

16. **C**

Start with Set B, since it is a finite set. Set B consists of 5, 10, 15, 20, 25, 30, 35, 40, and 45. Set A contains all prime numbers. The only prime number contained in Set B is 5, so the intersection of these two sets (i.e., Set C) will contain only the number 5. There is only one number in Set C, so the columns are equal. The correct answer is (C).

17. **B**

When multiplying fractions, multiply the numerators across and the denominators across. Therefore, the value of column A is $\frac{3}{4} \times \frac{3}{4} = \frac{3 \times 3}{4 \times 4} = \frac{9}{16}$. When adding fractions with a common denominator, add the numerators. Thus, the value of column B is $\frac{3}{4} + \frac{3}{4} = \frac{3+3}{4} = \frac{6}{4} = 1\frac{1}{2}$. Column B is greater. The correct answer is (B).

18. **C**

Since there are variables in the columns, plug in values for a and b, paying attention to restrictions given. Since $a > 0$, let $a = 2$. Since $b < 0$, let $b = -3$. Now, plug in these numbers to the expressions. Column A is $-(2 \times -3) = -(-6) = 6$. Column B is $-2 \times -3 = 6$ as well. The two columns are equal. You can try testing different values for a and b, but the columns will always be equal because the negative signs will always cancel out and the same numbers are being multiplied in each column, so the result will not vary. The correct answer is (C).

19. **B**

This question is testing math vocabulary. The median of a set is the middle number when the numbers are listed in order from least to greatest. In Set A, the numbers are already in order, so find the middle number: 8. Thus, column A is 8. In Set B, the numbers are also already in order. However, there is an even number of items in this set, so the median will be found by taking the average of the two middle numbers. The two middle numbers are 8 and 9, so the median is $\frac{8+9}{2} = \frac{17}{2} = 8.5$. The value in column B is 8.5. Since column B is greater, the correct answer is (B).

20. **C**

Inclusive means to include the outer limits—in this case, 1 and 10. In column A, add up all the integers, including 1 and 10: $1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + 10 = 55$. Simplify column B to get $5 \times 11 = 55$. Since the columns are equal, the correct answer is (C).

21. **B**

Remember, with exponents, write it out! Thus, column A can be rewritten as $(2 \times 2 \times 2) + (2 \times 2 \times 2) + (2 \times 2 \times 2) = 8 + 8 + 8 = 24$. Note that in column A, the quantities are being added, not multiplied. Column B can be rewritten as $2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2 \times 2$, which will equal a value larger than 24. Therefore, column B is greater. Another way to solve this problem is to use exponent rules. When exponents with the same base and same exponent are being added, simply treat them like any variable. For example, $x + x + x = 3x$. Thus, $2^3 + 2^3 + 2^3 = 3(2^3) = 3(8) = 24$. This is not the same as 2^9, which is a much larger number. Since column B is greater, the correct answer is (B).

22. **D**

Since there are variables in the columns, plug in. First, simplify column A: $7(x - 3) = 7x - 21$. Now, plug in a value for x. For instance, let $x = 3$. Plug in 3 to column A to find that $7(3) - 21 = 21 - 21 = 0$. Now, do the same for column B: $21 - 7(3) = 21 - 21 = 0$. The columns are equal, so eliminate (A) and (B). Remember, plug in a second time to see if a different outcome is possible. This time let $x = 2$. In column A, the expression will read $7(2) - 21$, which simplifies to $14 - 21 = -7$. In column B, the expression will read $21 - 7(2)$, which simplifies to $21 - 14 = 7$. Now column B is greater. Since the columns are not always equal nor is column B always greater, the correct answer is (D).

23. **B**

First, take the instructions in column A one piece of information at a time. The smallest positive factor of 25 is 1, and the biggest positive factor of 16 is 16. Thus, $1 \times 16 = 16$. Column A is 16. Since column B is greater, the correct answer is (B).

24. **A**

The probability of getting heads on any single flip is $\frac{1}{2}$, since there are two sides of a coin and only one of those is heads. Column A is the probability of getting heads on 2 consecutive flips, so you need to multiply the probability of the first flip by the probability of the second flip (i.e., Event 1 × Event 2): $\frac{1}{2} \times \frac{1}{2} = \frac{1 \times 1}{2 \times 2} = \frac{1}{4}$. To find column B, include the probability of a getting heads on the third flip (i.e., Event 1 × Event 2 × Event 3): $\frac{1}{2} \times \frac{1}{2} \times \frac{1}{2} = \frac{1 \times 1 \times 1}{2 \times 2 \times 2} = \frac{1}{8}$. Since column A is greater, the correct answer is (A). Note: If you know that the probability of getting the same result (in this case, heads) on consecutive flips of a coin diminishes with each subsequent flip, you can find the correct answer quickly!

25. **C**

Use the formula given to find the areas of each figure. In column A, the height of Cylinder A is 10 and the radius is 6. Plug these values into the volume formula to find that $V = \pi(6)^2(10) = \pi(36)(10) = 360\pi$. This means column A is 360π. For column B, you can find the volumes of Cylinder B and Cylinder C separately and then add the results together. Alternatively, since the two figures have the same dimensions, you can multiply the volume formula by 2 to find the total volume. Thus, column B is $V = 2\pi(6)^2(5) = 2\pi(36)(5) = 2\pi(180) = 360\pi$. Since the columns are equal, the correct answer is (C).

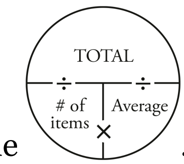
26. **C**

Since all the angles are labeled as x, they are all equal. The angles in a triangle must add up to 180°; therefore, each angle is equal to 60° since $\frac{180}{3} = 60$. Thus, the value of column A is 60, which makes the columns equal. The correct answer is (C).

27. **A**

To find percent change, use this formula: % change $= \frac{\text{difference}}{\text{total}} \times 100$. In column A, the difference from 1 to 2 is 1. Since you are looking for percent *increase*, the *smaller* number will be the original number. Thus, the original number is 1. Column A is $\frac{2-1}{1} \times 100$, which simplifies to $\frac{1}{1} \times 100 = 100$. For column B, the difference from 2 to 1 is still 1. However, since you are looking for percent *decrease*, the *larger* number will be the original number. Thus, the original value is now 2. Column B is $\frac{2-1}{2} \times 100$, which simplifies to $\frac{1}{2} \times 100 = 50$. The value in column A is greater, so the correct answer is (A).

28. **C**

Remember, if you see the word *average*, you can use an Average Pie 

. First, find the sum: 4 + 6 + 8 + 10 = 28. That number goes in the *total* place. There are 4 numbers, so put 4 in the *# of items* spot. Divide to get $\frac{28}{4} = 7$. Column A is 7. Remember that the median of a set is the middle number when the numbers are listed in order from least to greatest. Since there is an even number of items in this set, the median will be found by taking the average of the two middle numbers, 6 and 8. The average of 6 and 8 is $\frac{6+8}{2} = \frac{14}{2} = 7$, so the value in column B is 7. Since the two columns are equal, the correct answer is (C).

29. **D**

Since there are variables in the columns, plug in values for the variables and evaluate the expressions. For instance, let $x = 3$ and $y = 5$ since x and y must be positive numbers. Column A is $\frac{3 \times 5}{2} = \frac{15}{2} = 7.5$, whereas column B is $\sqrt{3 \times 5} = \sqrt{15}$, which is a little bit less than 4 since $\sqrt{16} = 4$. Since column A is greater, eliminate (B) and (C). Now, plug in a second time to see if a different outcome is possible. Let $x = 1$ and $y = 1$. Column A is $\frac{1 \times 1}{2} = \frac{1}{2}$, and column B is $\sqrt{1 \times 1} = \sqrt{1} = 1$. This time, column B is greater. Since neither column is always greater, the correct answer is (D).

30. **C**

This is a common trick on the ISEE. Notice that all the numbers are exactly the same and in the exact same order. All that is different is the placement of the decimals. 567.83 and 5.6783 are off by two decimals, or a factor of 100. Similarly, 0.40 and 40.0 are related by a factor of 100, or two decimal places as well. This cancels itself out, and the product will be the same for both columns. Check if you want to see for yourself, but if you know this trick it will save you some time on the test! The correct answer is (C).

31. **C**

First, find the probability of *not* picking red shoes, which is the same as picking purple or white shoes, and then compare the result to column B's value. There are 10 total pairs to pick from, and there are 8 pairs of shoes that are purple or white (i.e., not red), so the probability is $\frac{\text{not red}}{\text{total}} = \frac{8}{10}$. Column A is $\frac{8}{10}$ which is the value of column B. Since the columns are equal, the correct answer is (C).

32. **B**

Find the total of each column. Column A is 10 × 8 = 80, and column B is 20 × 4.5 = 90. Column B is greater, so the correct answer is (B). Remember, you can estimate column B's value if you're running short on time. 20 × 4 = 80; however, since 20 is really being multiplied by 4.5, not 4, you know the product has to be more than 80.

33. **C**

Remember, if you see exponents, you can always write it out! You could also plug in since there are variables in the columns. However, another way to find the values of the two columns is to use the exponent rules (MADSPM). For column A, $\frac{x^2x^5}{x^4} = \frac{x^{2+5}}{x^4} = \frac{x^7}{x^4} = x^{7-4} = x^3$. Column B is also x^3. Since the two columns are equal, the correct answer is (C).

34. **D**

The information given is $x^2 = 36$. Remember that 6 is not the only solution to this equation. 6^2 is equal to 36, but $(-6)^2$ is also equal to 36 since two negatives multiplied together will equal a positive number. Since column A can be greater than column B but could also be equal to column B, the correct answer is (D).

35. **C**

Remember that factors are numbers you can multiply together to equal another number. The largest positive factor of 16 is 16, since 1 × 16 = 16. Thus, column A is 16. Multiples are the result of multiplying two numbers together. The smallest positive multiple of 16 is also 16, since 16 × 1 = 16. Therefore, column B is also 16. Since the columns are equal, the correct answer is (C).

36. **B**

Since there are variables in the figure, plug in a value for x. For instance, let $x = 2$. The perimeter of square *ABCD* is equal to 2 + 2 + 2 + 2 = 8. The perimeter of *MNOP* is equal to 2 + 2(2) + 2 + 2(2), or 2 + 4 + 2 + 4 = 12. In this case, column B is greater, so eliminate (A) and (C). Try plugging in a second time to see if a different outcome is possible. Try $x = \frac{1}{2}$. The perimeter of square *ABCD* is equal to $\frac{1}{2} + \frac{1}{2} + \frac{1}{2} + \frac{1}{2}$, or 1 + 1 = 2. The perimeter of *MNOP* is equal to $\frac{1}{2} + 2\left(\frac{1}{2}\right) + \frac{1}{2} + 2\left(\frac{1}{2}\right)$, or 1 + 1 + 1 = 3. Column B is still greater. Since there are figures, it is not possible to plug in a negative number or zero; the only possible numbers will be positive. All positive numbers will yield the same outcome since the rectangle has two sides that are double the side length of the square, meaning that the rectangle will always have a perimeter a little bit (or a lot) bigger than the square's. Therefore, column B will always be greater, and the correct answer is (B).

37. **C**

Draw the triangle on the figure provided and write down the formula for the area of a triangle: $A = \frac{1}{2}bh$. Next find the values for the base and height. To find the base, find the value of *DE*. *AD* and *BC* are congruent since the shape is a rectangle. From there, the base must be 4, since *E* is the midpoint of *AD*, which splits 8 into two equal parts. The height of the triangle must meet the base at a right angle, so the height of the triangle is the same as the measure of side *AB*, which has a length of 6. Plug in these values to the formula to find that $A = \frac{1}{2}(4)(6) = (2)(6) = 12$. Column A is 12, which is equivalent to the value in column B. Since the columns are equal, the correct answer is (C).

38. **C**

Remember, with exponents, you can always write it out. However, this is a common trick on the ISEE. Another way to evaluate these expressions is to rewrite them with the same base.

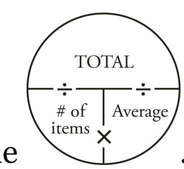
In column B, 64 is the same as 4^3, so the whole expression can be rewritten as $(4^3)^4$. Using the exponent rules (MADSPM), you can further simplify: $\left(4^3\right)^4 = 4^{3\times4} = 4^{12}$. Since the value in column B is the same as the value of column A, the correct answer is (C).

39. **A**

When the question asks about ratios, use a Ratio Box. The ratio of blue to red tickets is 3:5, so fill in that information into the top row of the Ratio Box. Remember to add the two numbers together to get the total for the ratio row: 3 + 5 = 8. No other information is provided. To make things simple, let's say that there are a total of 8 actual tickets. That makes the multiplier 1. Column B asks for *the fractional part of all the tickets that are blue*. Use the numbers from the Ratio Box. There are 3 blue tickets and 8 total tickets: $\frac{\text{blue}}{\text{total}} = \frac{3}{8}$. Thus, column B is $\frac{3}{8}$. Remember that when the numerators are the same, the fraction with the *bigger* denominator is actually the *smaller* number. Therefore, column A is greater, and the correct answer is (A).

	BLUE	RED	TOTAL
Ratio	3	5	8
Multiplier	× 1	× 1	× 1
Actual	3	5	8

40. **C**

Remember, if you see the word average, you can use an Average Pie 

. Luke made two trips, so the *# of items* is 2. Column A represents the average speed for the entire trip, so to find the total speed, add the speeds from both parts of the trip: 50 + 60 = 110. Put that value in the *total* spot. Finally, divide to find the average: $\frac{50+60}{2} = \frac{110}{2} = 55$. Thus, column A is 55, which is the same as column B. Since the two columns are equal, the correct answer is (C).

41. **A**

First, rearrange the equation in column A to $y = mx + b$ form. Subtract $12x$ from both sides to get $-4y = -12x + 16$. Divide by -4 on both sides to get $y = 3x - 4$. The slope is the coefficient of x, so the slope is 3. Column A is 3. Now, find the slope from the two points given in column B using the formula $m = \frac{y_2 - y_1}{x_2 - x_1}$. Thus, $\frac{y_2 - y_1}{x_2 - x_1} = \frac{12 - 6}{3 - (-3)} = \frac{6}{6} = 1$, and column B is 1. The value of column A is greater, so the correct answer is (A).

42. **B**

Don't be intimidated by the decimals under the square root! You probably know that $9^2 = 81$, right? To go from 81 to 0.81, you need to move the decimal to the left two places, so move the decimal one place to the left for each 9 and multiply: $0.9 \times 0.9 = 0.81$. Thus, $\sqrt{0.81} = 0.9$. Column A is 0.9. For column B, the decimal needs to be moved only one place. That means the two numbers that will be multiplied together will have to be bigger than 0.9. Therefore, column B will be greater. The correct answer is (B). Note, you can also guesstimate: $\sqrt{4} = 2$ and $\sqrt{9} = 3$, so the $\sqrt{8.1}$ will be less than 3 but greater than 2, which is still larger than 0.9.

43. **D**

There are infinitely different ways in which the length and width could multiply together to equal 36. For instance, the length of y could be 4 and the width of z could be 9, or vice versa. The values of y and z could also each be 6, which would make the two columns equal. Since it is impossible to know if y or z is the greater value, or if they are equal, without more information, the correct answer must be (D).

44. **A**

First, list the nonnegative even integers less than 10. Don't forget about zero! The list should contain 0, 2, 4, 6, and 8. Therefore, column A is 5. Since this is greater than the value of column B, the correct answer is (A).

45. **D**

Don't make assumptions! As for all geometry questions, use the rules of the shape you are given to help you solve and ignore anything unstated about the illustration. Isosceles triangles have 2 equal sides. There are therefore three possibilities for the two equal sides: 1) both *AB* and *BC* equal 2, 2) both *BC* and *AC* equal 2, or 3) *BC* equals 2 and both *AB* and *AC* equal some other number. Because the shape is not drawn to scale, it's possible that *AB*and *AC* could be equal to, say, 100, which would make the area of the triangle much greater than 4. In other words, there are so many possibilities, many of which have an area greater than 4, that the correct answer must be (D).