UL full test -4 - session 1:
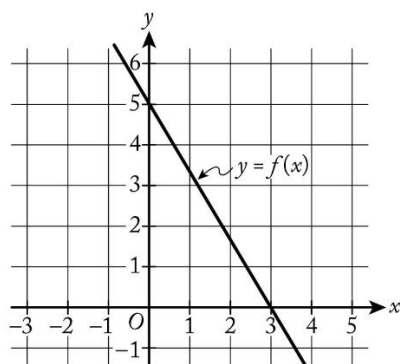
$5,\ 10,\ 15, \ldots,\ 100$

If each term in the sequence above is 5 more than the previous term, how many times does the digit zero appear in the sequence?

A	9	
B	10	✕
C	11	✓
D	50	
E	51	

Based on the graph in the xy-coordinate plane, what is the value of $f(3)$?

A	-10
B	-1
C	0
D	1
E	10

A scientist uses exactly three chemicals in the ratio $1 : 5 : n$ by weight. If the third chemical is $\dfrac{1}{2}$ the total weight, what is the value of n ?

A	1	
B	3	✗
C	5	
D	6	✓
E	12	

UL full test -4 - session 2:

$$y = -\frac{1}{2}x + 3$$

$$y = 3x - 4$$

In the xy-coordinate plane, what is the solution to the system of equations above?

A	$\left(\dfrac{1}{2}, -\dfrac{5}{2}\right)$
B	$\left(\dfrac{1}{2}, \dfrac{3}{2}\right)$
C	$\left(\dfrac{3}{2}, \dfrac{1}{2}\right)$
D	$(2, -2)$
E	$(2, 2)$

Given the equation $kx^2 + kx - 5 = 16$, if one solution to this equation is $x = 6$, what is the value of k ?

A	$\dfrac{11}{42}$
B	$\dfrac{1}{2}$ ✔
C	$\dfrac{7}{6}$
D	2
E	$\dfrac{21}{2}$

Point G bisects the line segment $\overline{FH}$. The length of $\overline{FG}$ is 16 less than 3 times the length of $\overline{GH}$. What is the length of $\overline{FH}$?

A	6	
B	8	
C	10	
D	16	✓
E	24	

If x and y are positive numbers, $\dfrac{x^8}{y^2} = 180$ and $x^6 = 5$, what is the value of $\dfrac{x}{y}$?

A	$\dfrac{1}{36}$
B	$\dfrac{1}{6}$
C	6
D	30
E	36

UL full test -3   - session 1:

−2, 0, 2, 0, −2, 0, 2, 0, ...

In the sequence above, −2 is the first term. If the pattern −2, 0, 2, 0 repeats itself indefinitely, which of the following terms has a value of −2 ?

A	32nd	✕
B	33rd	✓
C	34th	
D	35th	
E	36th	

In a survey taken of 60 households, 40 households reported having a dog and 30 households reported having a cat. If half of all households having a cat also have a dog, how many households reported have neither a dog nor a cat?

A	5	✓
B	10	
C	15	
D	20	✕
E	25	

Taxi fare is $\$1.50$ for the first mile and $\$0.40$ for each additional $\dfrac{1}{2}$ mile. How many miles can a passenger ride for $\$6.30$?

A	7	✓
B	7.5	✗
C	8	
D	8.5	
E	9	

If $a = 2b$ and $3b = 5c$ for positive values of a, b, and c, what is the value of $\dfrac{c}{a}$?

A	$\dfrac{3}{10}$	
B	$\dfrac{3}{5}$	
C	$\dfrac{5}{6}$	
D	$\dfrac{10}{3}$	
E	It cannot be determined from the information given.	

UL full test -3   - session 2:

$3x - 2y = -6$

In the xy-coordinate plane, the graph of the equation above is a line that intersects the x-axis at point A. What are the coordinates of A ?

A	$(-2, 0)$	
B	$(2, 0)$	
C	$(0, -3)$	
D	$(0, 3)$	
E	$(3, -2)$	

In the xy-coordinate plane, if point $P(4, 3)$ is reflected across the y-axis and then translated down 5 units, what are the coordinates of the resulting point?

A	$(-9, -2)$	
B	$(-9, 3)$	
C	$(-4, -2)$	✓
D	$(-1, -3)$	
E	$(4, -8)$	✗

Which of the following is equivalent to $\sqrt{8} + \sqrt{18}$?

A	5
B	$5\sqrt{2}$
C	$6\sqrt{2}$
D	$\sqrt{26}$
E	$2\sqrt{2} + 2\sqrt{3}$

What is the least common multiple of 6, 10, and 28 ?

A	140
B	210
C	420
D	840
E	1,680

How many centimeters are there in 10 kilometers?

|	
A	100
B	1,000
C	10,000
D	100,000
E	1,000,000

Isabella has to take five courses next semester: Composition, US Geography, Statistics, Chemistry, and a seminar. She needs to register for each course. She must choose from 2 composition courses, 3 geography courses, 2 statistics courses, 5 chemistry courses, and 7 seminar courses. If no courses meet at the same time, how many different combinations of courses are possible for Isabella to choose from?

A	17	
B	19	
C	210	✗
D	420	✓
E	2,100	

UL full test -2   - session 1:

What is the measure of each exterior angle of an equilateral triangle?

A	60°
B	120°
C	150°
D	180°
E	240°

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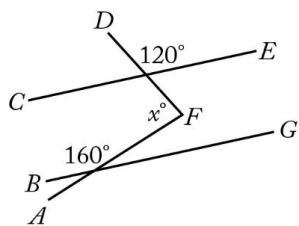
In the figure, segments $\overline{AF}$, $\overline{BG}$, $\overline{CE}$, and $\overline{DF}$ intersect as shown. If $\overline{BG} \parallel \overline{CE}$, what is the value of x ?

A	40
B	60
C	80
D	140
E	280

Simplify: $\left(x^{\frac{1}{2}}\right)^3 \left(x^3\right)^{-\frac{1}{2}}$ for $x > 0$

A	0
B	1
C	x
D	$x^{-\frac{9}{4}}$
E	x^{-3}

Which of the following is equivalent to $\dfrac{2}{x} + \dfrac{3}{x-1}$ for $x > 1$?

A $\dfrac{5}{x^2 - x}$

B $\dfrac{5x - 2}{x^2 - 1}$

C $\dfrac{5x - 3}{x^2 - 1}$

D $\dfrac{5x - 2}{x^2 - x}$
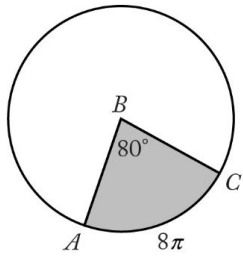
E $\dfrac{5x - 3}{x^2 - x}$

UL full test -2   - session 2:

Which of the following could be the length of the sides of a triangle?

A   3, 3, 6

B   1, 2, 3

C   3, 5, 9

D   3, 5, 8

E   8, 8, 15

Let the functions f and g be defined as $f(x) = 9 - x$ and $g(x) = 3x^2$. If $g(-2) = k$, what is the value of $f(k)$?

A -3 ✔

B   12

C   21

D   147

E   363

Point B is the center of the circle shown, and the length of arc $\overset{\frown}{AC}$ is 8π. What is the radius of the circle?

| A	4
B	8
C	9
D	18 ✓
E	36

UL full test -1   - session 1:

A truck driver took between 5.5 and 6 hours to make a 350-mile trip. The average speed, in miles per hour, must have been between which of the following two numbers?

A	48 and 50	
B	50 and 55	
C	55 and 58	
D	58 and 64	✓
E	64 and 100	

One staple weighs 31 milligrams. If a box of staples holds 250 staples, how many <u>grams</u> of staples does the box hold?

A	6.75	
B	7.75	✓
C	67.5	
D	77.5	
E	7,750	✗
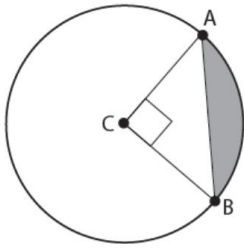
In the figure, C is the center of the circle. If the area of triangle ACB is 8, what is the area of the shaded region?

A	$8 - 4\pi$
B	$8 - 8\pi$
C	$4\pi - 8$ ✓
D	$8\pi - 8$
E	$16\pi - 8$

The heights of a maple tree and a cherry tree currently have a ratio of 5:2. If the maple tree grew 20 centimeters, and 20 centimeters was cut off the top of the cherry tree, the ratio of their heights would be 3:1. Currently, how much taller is the maple tree than the cherry tree, in centimeters?

A	160
B	240 ✓
C	260
D	280
E	400

If $a > 0$, which of the following expressions is equivalent to $\sqrt[4]{a^9}$?

A	a^{36}
B	a^5
C	a^3
D	$\left(a^4\right)\sqrt[4]{a}$
E	$\left(a^2\right)\sqrt[4]{a}$
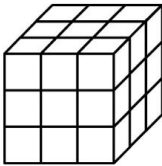
The cube shown is composed of 27 unit cubes. The top and bottom faces of the cube are painted red, and the other faces are painted blue. How many unit cubes are painted with only 1 color?

A	Ten	✔
B	Nine	
C	Eight	
D	Seven	
E	Six	✘

UL full test -1   - session 2:
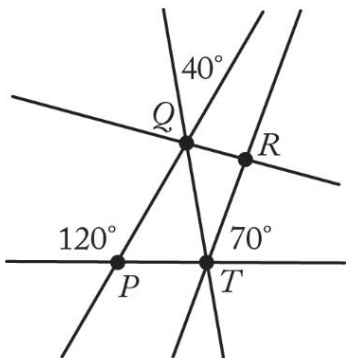
In the figure, five lines intersect as shown. What is the measure of $\angle QTR$?

A	30°
B	40°
C	50°
D	60°
E	70°

Grandma's Soup Company packages tomato soup in cylindrical cans that have a base diameter of 8 centimeters and a height of 10 centimeters. Each can contains four servings. The company also wants to package the soup in new cans that contain one serving. If the height of the new cans will be 10 centimeters, what should be the base diameter of these new cans, in centimeters?

A	1	
B	2	✕
C	4	✓
D	$\sqrt{2}$	
E	$2\sqrt{2}$	

Ava, Cara, Emma, Lily, and Mia are to be seated together in a row. If Emma and Lily must sit next to each other, how many different ways can the five girls be seated?

A	24	
B	48	✔
C	60	✘
D	120	
E	240	

In the xy-coordinate plane, the points $(4, 2)$ and $(-1, k)$ are on a line that is perpendicular to the line $y = 2x + 1$. What is the value of k ?

A	$-\dfrac{7}{2}$	
B	$-\dfrac{1}{2}$	✘
C	$\dfrac{7}{2}$	
D	$\dfrac{9}{2}$	✔
E	12	

UL Quantitative Section Test - 5

- Two sides are parallel to each other.
- The other two sides are equal in length.

The properties for a quadrilateral are given in the box above. Which of the following is a possible classification for the quadrilateral?

    I. A parallelogram
    II. A rectangle
    III. A trapezoid

A	None	
B	I only	✗
C	II only	
D	I and II only	
E	I, II, and III	✓

If a and b are two different integers, and the value of $\dfrac{a}{b}$ is also an integer, which of the following statements is true?

A	If b is odd, then a could be even.	✓
B	If b is even, then a could be odd.	
C	The product of a and b must be even.	
D	The product of a and b must be odd.	
E	The integers a and b cannot be consecutive.	✗

$A = \{$All integers divisible by 3 or $5\}$

$B = \{$All integers from 0 through $10\}$

Sets A and B are defined above. Which of the following sets gives all numbers that are in set B and <u>not</u> in set A ?

A	$\{0,\ 3,\ 5,\ 6,\ 9,\ 10\}$	
B	$\{0,\ 1,\ 2,\ 4,\ 7,\ 8\}$	✕
C	$\{3,\ 5,\ 6,\ 9,\ 10\}$	
D	$\{1,\ 2,\ 4,\ 7,\ 8\}$	✓
E	$\{0,\ 1,\ 2,\ 4,\ 7\}$	

An isosceles triangle has an interior angle with a measure of 38°. Which of the following could be the measure of one of the other interior angles of the triangle?

A	19°	
B	52°	✕
C	62°	
D	104°	✓
E	142°	

In the xy-coordinate plane, what is the slope of a line that is parallel to $4x + 6y = 24$?

A	-4	
B	$-\dfrac{2}{3}$	
C	$\dfrac{2}{3}$	
D	$\dfrac{3}{2}$	
E	4	

How many even numbers are greater than 1,000 and less than 2,000 ?

A	498
B	499
C	500
D	999
E	1,000