

## WSMC First Round Regional Knowdown 2008

"I will read the question twice then you will have 10 seconds to answer and your last answer given in the ten seconds will be the accepted one. If the answer is incorrect you will be retired from the competition. Are there any questions? Let's begin."

1.	The square root of 60 is closest to what integer?	8
2.	Find 30% of 60.	18
3.	The arithmetic mean of two numbers is 20 and one of the numbers is 25. What is the other number?	15
4.	Simplify $(10x^3)/(-5x^2)$ ?	$-2x$
5.	Evaluate $2x^2+y$ when $x = -1$ and $y = -1$ .	1
6.	Find the distance between $(0, 3)$ and $(4, 0)$ .	5
7.	Find the slope of the line through $(-1,3)$ and $(0,3)$	0
8.	If the area of a square is 25, what is the length of the diagonal?	$5\sqrt{2}$ or $\sqrt{50}$
9.	Solve: $5x - 20 = -5$ .	3
10.	If $F(x) = (x+1)x$ , find $F(4)$	20
11.	If $F(x) = \sqrt{x^2}$ find $F(\sqrt{3})$ .	$\sqrt{3}$
12.	Simplify $(x/3)$ plus $(x/6)$	$x/2$
13.	Simplify $(20x^3)/(2x^2)$	$10x$
14.	Find the slope of the line with the equation $4x-3y=7$ .	$4/3$
15.	If a circle has an area of $5\pi$ , what is its radius?	$\sqrt{5}$
16.	If $F(x) =  2x+1 $ find $F(-2)$	3

17.	How many of the following fractions are greater than $1/2$ : $5/8$ , $9/16$ , $2/5$ , and $42/85$ ?	2
18.	Solve for $x$ in $7x + 20 = 6$	-2
19.	If 50 is increased by 10% and then that result is decreased by 10%, what is the final number?	49.5
20.	If $F(x) = (x^{-1})(x)$ , find $F(3)$	1
21.	Find the $y$ -intercept for the equation $y = -4x^3 + 8$	8 or (0, 8)
22.	Solve for $x$ in $-3x > 6$	$x < -2$
23.	Solve for $x$ in $x^2 = 16$	4 or -4
24.	Find the slope of the line with the equation $y = 3 - 2x$ .	-2
25.	Simplify $3/5$ divided by $1/2$	$6/5$ or $1 \frac{1}{5}$
26.	Evaluate $(2/3) - (1/2)$	$1/6$
27.	Simplify $4x - (2x - 3)$	$2x + 3$
28.	If two similar polygons have perimeters of $2e$ and $3e$ , what is the ratio of their corresponding diagonals?	2 to 3
29.	Find the length of a rectangle that has a perimeter of 16 and a width of 5.	3
30.	Simplify $\sqrt{50}$ ?	$5\sqrt{2}$

## WSMC State Second Round Knowdown 2007

"The second round will consist of five questions. In this round I will read the question and all of you will write your final answer on the paper in front of you. You will have 15 seconds to answer and I will count down the final three seconds; 3, 2, 1, 0. When I say zero your pencil must be on the desk in front of you or you will be disqualified. Your answers will be checked after each question. Each correct answer will earn a point. At the end of round two, participants are ranked. If there is clearly a first, second and third, Knowdown is over. If there are ties, they will be broken by sudden death Third Round Play. Are there any questions? Let's begin."

1	If a boat travels upstream at 15 mph and downstream 25 mph, how fast does the boat travel in still water?	20 mph
2	Find the measure in degrees of one exterior angle of a regular decagon?	36
3	If farmer observes in a pen only chicken and sheep. She also notices there are 10 heads and 26 legs. How many chickens are there?	7
4	How many different ways are there to arrange in a row: two dimes, a nickel, a quarter, and a penny?	60
5	For what values of $x$ is $f(x)=(3x)/(x^2-1)$ undefined?	1 and -1

## WSMC Regional : Third Round Knowdown 2005

"I will project the question and you will have 20 seconds to write and circle your answer on your paper. I (we) will count down the last three seconds as in round two and then collect or score your papers. If your pencil is not down by the count of zero, your answer will not be accepted. You will be able to use an SAT approved calculator on this section. Are there any questions? Let's begin."

## Third Round Answers

1.  $9x^2 - 12x + 4$
2.  $(5y)/(2x^6)$
3.  $11/17$
4.  $3.73$
5.  $2$
6.  $1569.98$
7.  $5x + 1y = -14$
8.  $y \leq 7$  **or** the real numbers less than or equal to 7 **or**  $(-\infty, 7]$
9.  $-2 \pm \sqrt{3}$  **or**  $-0.268$  or  $-3.732$
10.  $\begin{bmatrix} 4 & 6 \\ 8 & -2 \end{bmatrix}$
11.  $23.26$
12.  $-2$
13. 180 degree rotation (clockwise or counter-clockwise) about the origin **or** flip (reflection) over one axis and then the other.
14.  $f^{-1}(x) = 2 - \sqrt{x}$
15. either  $(x-2.5)^2 + y^2 = 6.25$  or  $(x+2.5)^2 + y^2 = 6.25$
16.  $413.97$
17.  $60, 120, 240, 300$
18.  $2e^{2x}$
19.  $9$