

WSMC First Round Knowdown 2003

"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 asked to turn in your nametag and leave the competition. Are there any questions? Let's begin."

1.	In a bag containing 5 marbles, where 1 is black and 1 is red, what is the probability of drawing a non-black?	$\frac{4}{5}$ or .8
2.	Solve for x in $5-2x=9$	-2
3.	A right triangle has a leg of 4 and a hypotenuse 32. What is the length of the other leg?	4
4.	Evaluate $2xy^2$ when $x=-4$ and $y = 2$.	-32
5.	Evaluate 10 divided by $\frac{5}{6}$ multiplied by 2.	24
6.	Find the slope between the points (2, -2) and (4, -1).	$\frac{1}{2}$
7.	What is the probability of rolling a regular fair six sided die three times and each roll being a multiple of 3?	$\frac{1}{27}$
8.	Give the decimal form of -6 plus $\frac{3}{4}$.	-5.25
9.	Give the prime factorization of 40?	$2*2*2*5$ or 2^3*5
10.	What is the x intercept for the graph of $y=x+1$?	-1
11.	Find 11% of 120.	13.2

12.	54 cubic feet contains how many cubic yards?	2
13.	Evaluate and simplify $7/4$ divided by $1/2$.	$7/2$ or 3.5
14.	Find the cube root of -0.027.	-0.3
15.	Evaluate $-5x^3y$ when $x = -2$ and $y = 1/8$.	5
16.	What is the median of 3, 3, 3, 5, 8, and 8?	4
17.	If a circle has an area of 25 , what is the diameter?	10
18.	What is the sum of all the edges on a cube with a volume of one?	12
19.	objects Evaluate $(4/5)^2 + (3/5)^2$	1
20.	Evaluate 9^2 divided by 3^4	1
21.	If $F(x) = 3x - x^2$, find $F(-5)$	-40
22.	Find the slope of the line through (4,0) and (0,8)	-2
23.	Evaluate (16) divided (8/5)	10
24.	Solve for x in $x^2 - 2x = 0$	0 or 2
25.	Find the slope of the line with the equation $3y+6x=5$.	-2
26.	Find 250% of 300	750
27.	If $F(x) = 1-2x $ find $F(6)$	11
28.	Evaluate $1/4 - 2/5$	$-3/20$
29.	Solve for x in $4 - 3x > 7$	$x < 1$

30.	Find the y intercept for the line whose equation is $7x + 10y = 25$.	2.5 or (0,2.5)
31.	Find the diagonal of a rectangle with sides of 2 and 3.	5
32.	Find the arithmetic mean of 6,7,8,9,10	8
33.	Find the least common multiple of 1,2,3,4,5,6	60
34.	Find the median of the even integers from 11 to 23.	17

WSMC Regional Second Round Knowdown 2003

"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 pad of 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. Before each question, put your name at the top of the piece of paper. I (we) will collect the papers after each question and those persons with the correct answers will continue. I will collect the nametags for those that are eliminated. Are there any questions? Let's begin."

1	When flipping a fair coin 7 times what is the probability of getting one tail and 6 heads?	7/128
2	What is the volume of a pentagonal pyramid whose height is 15 and base area is 20	100
3	How many multiples of 7 are between -100 and 50	22
4	If $F(x)=2x+3$ what is the inverse of $F(x)$?	$(x-3)/2$ or $0.5x-1.5$
5	What is the distance between $x+y=5$ and $x+y=0$?	2.5 2 or $5/2$

WSMC Regional

Third Round Knowdown 2003

"I will place the question on the overhead 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 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."

Find the midpoint of $(4,7)$
and $(-2,4)$.

$(1,5.5)$

What is the volume of a
sphere with a diameter of 4
meters?

$32\pi/3$ or 33.5

If the ratio of the weights of
two similar objects is $27:8$
then what is the ratio of the

surface areas?

9:4

Solve for x in:

$$x^2 - 2xy + y^2 = 0$$

x=y

Find the slope and y intercept
for

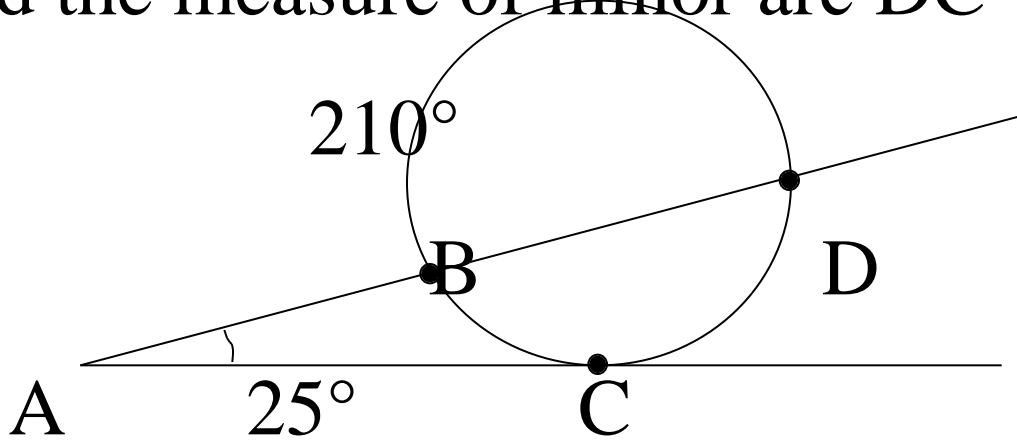
$$7x + y = 12 + 5x + 2y$$

m=2 and (0,-12)

Find the minimum value of

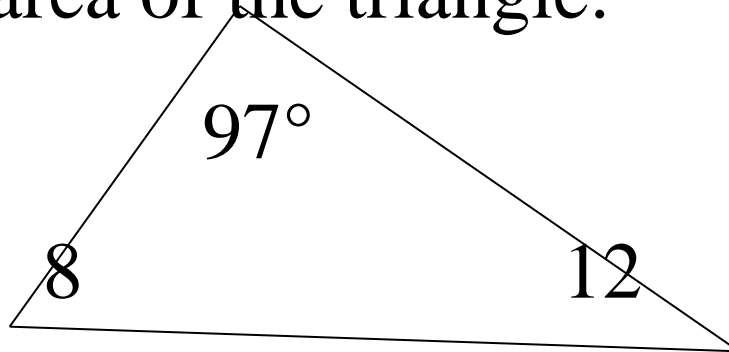
$$f(x) = 2x^2 + 8x - 20$$

Find the measure of minor arc DC



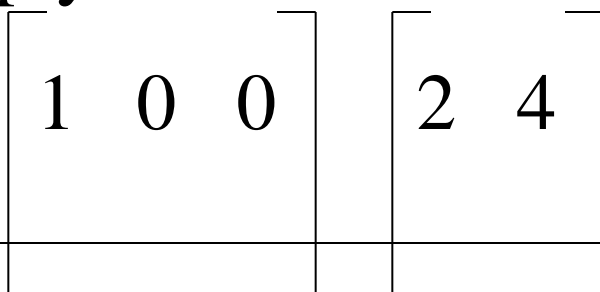
100°

Find the area of the triangle:



$48\sin(97^\circ)$ or 47.6

Multiply these matrices:



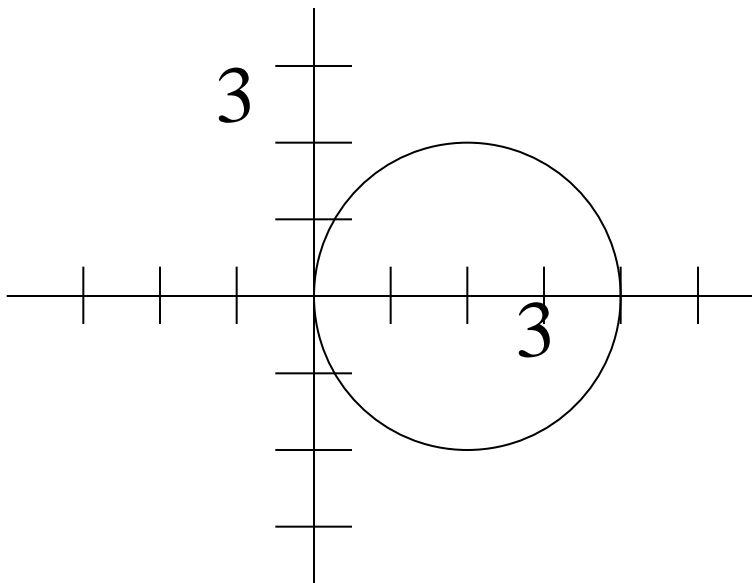
$$\begin{pmatrix} 0 & 1 & 0 \\ 0 & 0 & 1 \end{pmatrix} \cdot \begin{pmatrix} 3 & -1 \\ 0 & 2 \end{pmatrix}$$

Same as the
second one

Given $f(x) = 4x^2 - 2x + 1$,
find $f'(x)$.

8x-2

Write the equation of this circle:



$$(x-2)^2+y^2=4$$

If $f(x)$ is a function over the real numbers, what is the

domain of $f(x)$ if

$$f(x) = \sqrt{x+4}$$

$$x > -4$$

Describe the transformation where (x,y) is mapped to (y,x)

Inverse or
reflection over $y=x$
line

Solve for all possible values
of θ where $0^\circ < \theta < 360^\circ$:

$$2 \sin (2\theta)+1=0$$

$105^\circ, 285^\circ,$
 $165^\circ, 345^\circ$

Given these probabilities:

$P(A)=1/2$, $P(B)=2/3$, and

$P(A \text{ or } B)=5/6$,

what is $P(A \text{ and } B)$?

1/3

What is the volume of the
largest cone that will fit in a

hemisphere that has a volume
of 100?