

5 Mina received \$200 to spend in Paris. The exchange rate is 5.88 French francs to the dollar. There is a 4.5% tax included in the prices in France. She knows, however, that being a U.S. citizen, she will not have to pay the tax. What is the highest price (in French francs) of an article that Mina can buy?

6 Each student in a college must go for lottery to obtain housing. One out of every five applicants (selected at random) is offered housing on campus. If a student enters the lottery for two consecutive years, what are her chances of getting an offer for housing?

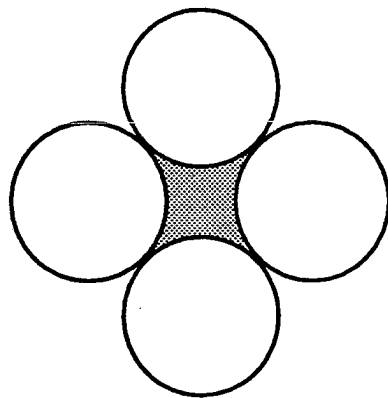
7 What is the 1997th digit in the decimal representation of the number $1/13$?

8 A polynomial has remainder 8 when divided by $x - 2$, remainder 3 when divided by $x - 3$, and remainder -6 when divided by $x - 4$. Find the remainder when the same polynomial is divided by $(x - 2)(x - 3)(x - 4)$.

9 A function f , defined for all non-zero real numbers x , satisfies $3f(x) + 4f(1/x) = 5x$. Find all x for which $f(x) - f(-x) = 0$.

10 If an arc of 45° on Circle I has three times the length of an arc of θ° on Circle II, and the area of Circle I is four times the area of Circle II, find θ (in degrees).

11 Four circles of the same size are arranged as shown in the adjoining figure. If the total area of the four circles is 36π , what is the diameter of the largest circle that can be drawn in the enclosed (shaded) region?



NAME _____ *SOLUTIONS!* _____
 SCHOOL _____

WORCESTER POLYTECHNIC INSTITUTE

Tenth ANNUAL INVITATIONAL MATH MEET
 OCTOBER 23, 1997
 INDIVIDUAL EXAM ANSWER SHEET

QUESTION	ANSWER	SCORE
1	4	
2	-10	
3	35	
4	WORCESTER COUNTY	
# CORRECT × 1 =		

QUESTION	ANSWER	SCORE
5	1228.92	
6	$\frac{9}{25}$	
7	2	
8	$-2x^2 + 5x + 6$	
# CORRECT × 2 =		

QUESTION	ANSWER	SCORE
9	$\pm \frac{2}{\sqrt{3}}$	
10	30	
11	$6\sqrt{2} - 6$	
# CORRECT × 3 =		

Individual Total