

Lab	Grains of Wheat	Name	Asa Hayes
Questions	1 -- 4	Compiler	gcc version 6.3.0 @ build.tamu.edu
	MRN		

Q1	What square number must you reach in order to hold at least the following numbers of grains of wheat?		
	Grains of wheat	Square No.	
	1000	11	
	1,000,000	21	
	1,000,000,000	31	

Q2	How many squares can you get to with the following integer datatypes before overflow occurs?		
	Integer datatype	Square No.	Observed Value
	short	15	16,384.00
	int	31	1,073,741,824.00
	long	63	-9,223,372,036,854,470,000.00
	long long	63	4611686018427387904

Not sure about this, but the result was the same between "long" and "long long". Compiled on A&M servers and everything else works properly

Q3	How many squares can you get to with the following floating-point datatypes <i>before</i> they lose precision? (hint: look for exponential notation; may have to increase past 64 squares)		
	Floating-point datatype	Square No.	Observed Value
	float	30	536,870,912.00
	double	57	72057594037927936
	long double	70	590295810358705651712

Q4	How many squares can you get to with the following floating-point datatypes <i>before</i> the number of grains of wheat can no longer be approximated? (hint: look for <code>inf</code>; may have to increase past 64 squares)		
	Floating-point datatype	Square No.	Observed Value
	float	129	1.70141183e+38

		double	1024	8.9884656743115795e+307			
		long double	16384	5.94865747678615882543e+4931			