

Batch 07007  
Instrument 1

$r$	$r - 100$	$(r - 100)^2$
103	3	9
102	2	4
103	3	9
103	3	9
103	3	9
104	4	16
104	4	16
104	4	16
103	3	9
103	3	9
102	2	4
102	2	4
103	3	9
103	3	9
102	2	4
103	3	9
103	3	9
103	3	9
102	2	4
102	2	4
<u>1133</u>	<u>57</u>	<u>171</u>

$612 \times 10^{-3}$   
 $\frac{312}{2057} \times 10^{-3} = 2.85$   
 $102.85 \times 10^{-3}$

$$\sigma^2 = \frac{\sum r^2 - \bar{r}^2 n}{n-1}$$

$$= \frac{(171 - 20 \times 2.85^2) \times 10^{-6}}{19}$$

$$= \frac{(171 - 162.45) \times 10^{-6}}{19}$$

$$= \frac{8.55}{19} \times 10^{-6} \quad \sigma^2 = 0.45 \times 10^{-6}$$

$$\sigma = 0.67082 \times 10^{-3}$$

adding back 100  $\bar{r} = 0.10285$

$\sigma = 0.00067082$

Instrument 3

101	1	1
102	2	4
102	2	4
102	2	4
102	2	4
101	1	1
101	1	1
102	2	4
102	2	4
101	1	1
<u>16</u>	<u>20</u>	

$\frac{16}{20} = 1.6$   
 $\bar{r} = 0.1016$

$$\sigma^2 = \frac{(28 - 10 \times 1.6^2) \times 10^{-6}}{9}$$

$$= \frac{28 - 25.6}{9} \times 10^{-6} = \frac{2.4}{9} \times 10^{-6}$$

$$= 0.26667 \times 10^{-6}$$

$$\sigma = 0.516398 \times 10^{-3}$$

$\sigma = 0.0005164$

EXHIBIT NO. 6  
 Admitted: ✓  
 Not Admitted:      
 Date: 10/26/10

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Inst 4/

n-100

100	0	0
101	1	1
100	0	0
101	1	1
100	0	0
102	2	4
103	3	9
103	3	9
102	2	4
102	2	4
101	1	1
102	2	4
102	2	4
102	2	4
102	2	4
102	2	4
102	2	4
101	1	1
102	2	4
101	1	1
106	6	36
100	0	0
99	-1	1
100	0	0
99	-1	1
100	0	0
101	1	1
101	1	1
100	0	0
101	1	1

+30  
38      10+40+18+36  
 1.26667      104

$\bar{x} = 0.101267$

$$\sigma^2 = \frac{104 - 30 \times (1.26667)^2 \times 10^{-6}}{29}$$

$$= \frac{5586667 \times 10^{-6}}{29}$$

$$= 1.926437 \times 10^{-6}$$

$\sigma = 1.38796 \times 10^{-3}$

$\sigma = 0.00138796$

Inst 5

10.2	99	2	-1	4	1
10.1	100	1	0	1	0
10.4	101	4	1	16	1
10.2	100	2	0	4	0
10.5	-100	5	0	25	0
100		0		0	
101		1	32	1	10.4
101		1	20	1	
101		1	16	1	
101		1		1	
101		1		1	
102		2		4	
103		3		9	
105		5		25	
103		3		9	

$\bar{x} = 0.10160$

$$\sigma^2 = \frac{104 - 20 \times 160^2 \times 10^{-6}}{19}$$

$$= 2.77895 \times 10^{-6}$$

$\sigma = 1.66702 \times 10^{-3}$

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### Arithmetic average

$$\begin{array}{r} 0.10285 \\ 0.10160 \\ 0.10127 \\ 0.10160 \\ \hline 0.40732 \\ \div 4 = \underline{0.10183} \end{array}$$

### Weighted average

$\bar{x}$	$\sigma^2 (x10^6)$	$1/\sigma^2$	$\bar{x}/\sigma^2$
0.10285	0.45	2.2222222	0.228556
0.10160	0.26667	3.749953	0.380995
0.10127	1.92644	0.519093	0.052567
0.10160	2.77895	0.359848	0.036561
		<u>6.851116</u>	<u>0.698679</u>

$$\text{weighted avg} = \frac{\sum \bar{x}_i / \sigma_i^2}{\sum 1/\sigma_i^2} = \underline{0.10198}$$