

Worksheet Solutions 1

TI-30XB MultiView™: That's So Random!

WS1

1. a) `randint(1,20)`
b) `randint(2,19)`
c) `randint(21,30)`

2. a) `randint(1,6)`
b) Answers will vary, but the frequency of each die score will be close to 10.
Given that only 60 trials are done, they may still be significant variation in the frequencies.

3. Answers will vary, but the frequency of each die score will be close to 10.
Given that only 60 trials are done, they may still be significant variation in the frequencies.

4. There will most likely be differences in the frequencies between students experimental results when conducting such a small number of trials.

5. Yes they are – in spite of the variation in results – this highlights that the randomness will have a greater effect over a limited number of trials.

6. Answers will vary but relative frequencies will generally be close to $\frac{1}{6}$ or 0.16667.
Note that all six relative frequencies should sum to 1.

7. $\frac{1}{6}$ or approximately 0.1667

8. $\frac{1}{6} \times 6000 = 1000$; we would expect that in 6000 trials the experimental frequency would be closer to the expected frequency.

Worksheet Solutions 2

TI-30XB MultiView™: That's So Random!

WS2

1. $\text{randint}(1,6) + \text{randint}(1,6)$

2. a) 2

b) 12

3 & 4. Answers will vary, however the frequencies of the sums in the middle (ie. 6, 7, 8) should be significantly greater than the frequencies of the lower and higher sums (ie. 2, 3, 11, 12).

5. Each outcome is equally likely, however there are more ways that some events (eg. 'a sum of 7') can be obtained via arrangements of the two dice.

6.

	Die 1 score					
Die 2 score	1	2	3	4	5	6
1	1,1	1,2	1,3	1,4	1,5	1,6
2	2,1	2,2	2,3	2,4	2,5	2,6
3	3,1	3,2	3,3	3,4	3,5	3,6
4	4,1	4,2	4,3	4,4	4,5	4,6
5	5,1	5,2	5,3	5,4	5,5	5,6
6	6,1	6,2	6,3	6,4	6,5	6,6

7. 36 outcomes

8.

Sum	2	3	4	5	6	7	8	9	10	11	12
No. of ways to obtain this sum	1	2	3	4	5	6	5	4	3	2	1
Probability (fraction)	$1/36$	$2/36$	$3/36$	$4/36$	$5/36$	$6/36$	$5/36$	$4/36$	$3/36$	$2/36$	$1/36$
Probability (decimal)	0.028	0.056	0.083	0.111	0.139	0.167	0.139	0.111	0.083	0.056	0.028

9. In most cases, the theoretical probabilities will be close in value to the experimental ones, however as the number of trials is relatively low, some discrepancy may occur.

10. a) 500

b) 1000

1. `randint(1,20)`

2. a) `randint(1,4) + randint(1,4)`
 - b) 2, 3, 4, 5, 6, 7, 8
 - c) No
 - d) 5 is the most likely sum, since there are the most possible arrangements for this sum.
(1,4), (2,3), (3,2) and (4,1)

3. a) 10 000
 - b) 30 000
 - c) 40 000

4. a) The heights of the bars will probably be closer, as the frequencies of each will become less varied.
 - b) The heights of the bars will probably be less close, as the frequencies of each will more varied.

5. a) $\frac{1}{2}$
 - b) $\frac{1}{6}$
 - c) 1