

ANSWERS TO Gr12 Essential PROBABILITY WORKBOOK

Page 2 **D is Blue**

1. a blue letter $\frac{1}{4}$ 25%
2. the letter A $\frac{1}{4}$ 25%
3. a black letter $\frac{3}{4}$ 75%
4. the letter C $\frac{1}{4}$ 25%
5. a black letter B $\frac{1}{4}$ 25%
6. the letter D or B $\frac{1}{2}$ 50%

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7. white $\frac{1}{6}$ 16.67%
ie: $P(\text{white}) = \frac{1}{6}$
8. black $\frac{1}{3}$ 33.33%
 $P(\text{black}) = \frac{1}{3}$
9. blue $\frac{1}{2}$ 50%
 $P(\text{blue}) = \frac{1}{2}$
10. a marble that is **not** white $\frac{5}{6}$ 83.33%
 $P(\overline{\text{white}})$

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1. How many slips are there? **8** slips
2. What is the probability of being on the cleanup committee? $\frac{4}{8} \rightarrow \frac{1}{2}$ 50%
3. What is the probability of being on the invitation committee? $\frac{0}{8} \rightarrow 0$
4. What is the probability of being on the decorations committee? $\frac{1}{8} = 12.50\%$

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5. What is the probability of **not** being on the decorations committee? $\frac{7}{8} = 87.50\%$
6. What is the sum (total) of the probabilities in problems 4 and 5? $1 \rightarrow 100\%$
7. What is the probability of being on the refreshments committee? $\frac{3}{8} \rightarrow 37.50\%$
8. When you add the probability that an outcome **will** happen and the probability that it **will not** happen, the answer is 1 OR 100%

Page 4 & 5

- 1) $\frac{1}{4}$ or 25% for each question 2) $\frac{1}{5}$ or 20% on each question
3) 0 / 6 or 0% chance 4) 5/ 10 ie: $\frac{1}{2}$; 50%
5) 10/10 or 1 ; 100% 6) 0/ 10 or 0 ; 0%
7) 6/6 or 1 or 100%

Page 6 & 7

- 1) 9 2) $\frac{3}{9}$ or $\frac{1}{3}$, 33.33%
3) 8 4) $\frac{1}{8}$; 12.50% 5) $\frac{1}{4}$; 25% 6) $\frac{4}{8}$; 50%

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- 1) A blue 1 and a black 3: $\frac{1}{36}$; 2.78% 2) $\frac{1}{36}$; 2.78%
3) A blue 4; black 5 OR a Blue 5, black 4: $\frac{2}{36} = \frac{1}{18}$; 5.56%
4) Prob(Sum =10) = $\frac{3}{36} = \frac{1}{12}$; 8.33% 5) $\frac{0}{36}$; 0%
6) Prob(sum<13) = $\frac{36}{36} = 1$; 100%

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- 7) $\frac{8}{10} = \frac{4}{5}$; 80.00% 8) 2,500 9) $\frac{3}{4}$; 75%
10) 15 times 11) 150 times

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- 6) No. (So make them same!)
7) six 8) 12 (once you make them same size!)
9) $p(\text{win}) = \frac{6}{18} = \frac{1}{3}$; 33.33% 10) $p(\text{not Win}) = \frac{12}{18} = \frac{2}{3} = 66.67\%$

Page 12& 13

- 1) 4 possible outcomes
- 2) $1/4$; 25%
- 3) $2/4 = 1/2$; 50%
- 4) {HHH; HHT, HTH, HTT, THH, THT, TTH, TTT}
- 5) 16 possible outcomes
- 6) Prob (H,H,H) = $1/18$; 12.50%
- 7) Prob(2H and 1T) ie: HHT, HTH, or THH is $3/8$ or 37.50%
- 8) Prob (1 Tail or more) = $7/8$; 87.50%

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- 1) Prob(5,5) = $1/36$; 2.78%
 - 2) prob(doubles) = $6/16 = 1/6$; 16.67%
 - 3) Prob(Blue4, Black 5 OR Blue4, Black 5) = $2/136 = 1/18 = 5.56\%$
 - 4) Prob (sum of 10) = $3/36 = 1/12$; 8.33%
 - 5) Prob(sum = 20) = $0/36$; 0%
 - 6) Prob (sum <13) = 100%
 - 7) prob (sum =7) = $6/6 = 1/6$; =16.67%
 - 8) Prob (two different numbers) ie: not doubles = $30/36 = 5/6 = 83.33\%$
- [notice how Prob(Doubles) + Prob(NOT Doubles) = 16.67% plus 66.67% = 100%]

Pages 15- 17

Try doing some of the experimental probability experiments yourself

Page 18 & 19

- 1) $1/2$; 50%
- 2) 100 times
- 3) 500 defectives
- 4) $1/4$; 25%
- 5) 5 times
- 6) $3/4$; 75%
- 7) 45 times

Pages 20 & 21

- 1) 34%
- 2) 1,020
- 3) 14%
- 4) 420
- 5) 810
- 6) 750
- 7) 1,170
- 8) Verdugo wins
- 9) 150 more votes

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- 4) $1/4$; 25%
- 5) 20 times
- 6) 8,000 defective
- 7 and 8) actually do the experiment and calculate your results; compare that to the theory
- 9) the mathematical probably (ie: theoretical) is 50% [provided you have a fair coin!]