Check Your Understanding
Probability – Basic, And, and Or

The table below identifies some key concepts from this unit. Complete each question, check your answers, and get help as needed.

Key Concepts	Basic Questions	Intermediate Questions	Advanced Questions
Basic Probabilities	1	2	
Probabilities with "And"	3	5	6
Probabilities with "Or"	4	5	6

1) Dr. James has a bag of marbles. In the bag there are 7 green marbles, 3 red marbles, and 5 blue marbles. You randomly pick one marble from the bag.

   Determine:

a) $P(blue)$ b) $P(green)$ c) $P(red)$

2) You are choosing one card, at random, from a standard deck of playing cards (not including the jokers).

   Determine:

a) $P(club)$ b) $P(queen\ of\ hearts)$ c) $P(odd\ numbered\ spade)$

3) You are flipping a coin and drawing one toy animal, at random, from a bag containing 2 sheep, 3 pigs, and 4 cows.

Determine:

a) $P(\ heads\ \cap\ pig)$ b) $P(tails \cap\ cow)$ c) $P(pig\ \cap\ tails)$

4) You are flipping a coin and drawing one toy animal, at random, from a bag containing 2 sheep, 3 pigs, and 4 cows.

Determine:

a) $P(\ heads\ \cup\ pig)$ b) $P(tails \cup\ cow)$ c) $P(pig\ \cup\ tails)$

5) Jacob is playing a carnival game where he must choose a random floating rubber duck and roll a six-sided die. There are 13 ducks, each with a number from 1-13 on the bottom. There are two ways Jacob can win:

   A) Choose an odd-numbered duck and roll an odd number
   B) Choose an even-numbered duck or roll a 4

   Jacob thinks he has a better chance winning with option A than option B.
   Is Jacob correct?

6) A and B are two independent events. You know $P(A) = 0.2$ and $P(A \cap B) = 0.12$. Determine $P(A \cup B)$.

Answer Key

1)	**a)**) $P(blue) = \frac{5}{15}\ or\ \frac{1}{3}$	**b)**) $P(green) = \frac{7}{15}$	**c)**) $P(red) = \frac{3}{15}\ or\ \frac{1}{5}$
2)	**a)**) $P(club) = \frac{13}{52}\ or\ \frac{1}{4}$	**b)**) $P(queen\ of\ heart) = \frac{1}{52}$	**c)**) $P(odd\ numbered\ spade) = \frac{4}{52} or \frac{1}{13}$
3)	**a)**) $P(heads \cap pig) = \frac{1}{6}$	**b)** $P(tails \cap cow) = \frac{2}{9}$	**c)** $P(pig \cap tails) = \frac{1}{6}$
4)	**a)** $P(\ heads\ \cup\ pig) = \frac{2}{3}$	**b)** $P(tails \cup\ cow) = \frac{13}{18}$	**c)** $P(pig\ \cup\ tails) = \frac{2}{3}$
5)	Option A probability is $\frac{7}{26} = 0.27$ Option B probability is $\frac{43}{78} = 0.55$ Since Option B has a higher probability, Jacob is incorrect.		
6)	$P(A \cup B) = 0.68$		