	Biology	Chemistry	Physics	Total
Female	18	15	14	47
Male	8	6	19	33
Total	26	21	33	80

Second Table:

Find the probability that I pick a student at random that studies Biology. $\frac{26}{80} = \boxed{\frac{13}{40}}$

Find the probability that I pick a female given that she studies Biology. $\frac{18}{26} = \boxed{\frac{9}{13}}$

Find the probability that I pick a student at random that studies Biology or Chemistry.

$$\frac{26}{80} + \frac{21}{80} = \boxed{\frac{47}{80}}$$

P (Female | Chemistry) $\frac{15}{21} = \boxed{\frac{5}{7}}$

P (Chemistry | Female) $\boxed{\frac{15}{47}}$

P (Female or Chemistry)

$$\frac{47}{80} + \frac{21}{80} - \frac{15}{80} = \boxed{\frac{53}{80}}$$

P (Female and Chemistry)

$$\frac{15}{80} = \boxed{\frac{3}{16}}$$

Students at a University in England were surveyed. The tables represent the findings. Complete the two- way tables below and then use them to answers the questions.

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TABLE A

Students studying a Science

	Chemistry	Biology	Physics	Total
Boys	18	15	14	47
Girls	8	6	19	33
Total	26	21	33	80

TABLE B

Students studying a Language

	German	French	Polish	Total
Girls	2	23	9	34
Boys	15	2	9	26
Total	17	25	18	60

TABLE C

Students studying a D&T subject

	Art	Food	Textiles	Total
Boys	11	6	15	32
Girls	22	18	28	68
Total	33	24	43	100

TABLE D

Students studying an "English" subject

	Language	Literature	Media	Total
Girls	22	78	20	120
Boys	38	58	22	118
Total	60	136	42	238

TABLE E

Students studying Maths

	Applied Maths	Statistics	More maths	Total
Girls	20	75	20	115
Boys	100	39	28	167
Total	120	114	48	282

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1. How many students were surveyed? 760

2. What is the probability I pick a student who is studying Art? $\frac{33}{760}$

3. What is the probability I pick a student who is a girl studying Applied Math? $\frac{1}{38}$

4. What is the probability I pick a student who is studying science or math? $\frac{20}{760}$ $\frac{181}{380}$

5. In Table C What is the probability I pick a student who is studying Art given that they are a girl? $\frac{362}{760}$ $\frac{11}{34}$

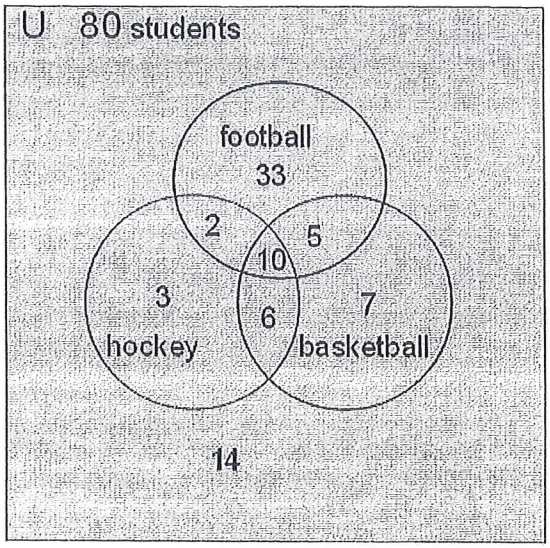
6. In Table C What is the probability I pick a student who is studying Art given that they are a boy? $\frac{22}{68}$ $\frac{11}{32}$

7. In Table B Find P (girl | studies Polish) $\frac{1}{2}$ $\frac{9}{18}$

8. In Table D Find P (Literature | Girl) $\frac{13}{20}$ $\frac{78}{120}$

9. In Table E Find P(Girl | Statistics) $\frac{25}{38}$ $\frac{75}{114}$

Use the Venn diagram to find the following probabilities:



8. P(Student plays football) $\frac{50}{80} = \frac{5}{8}$

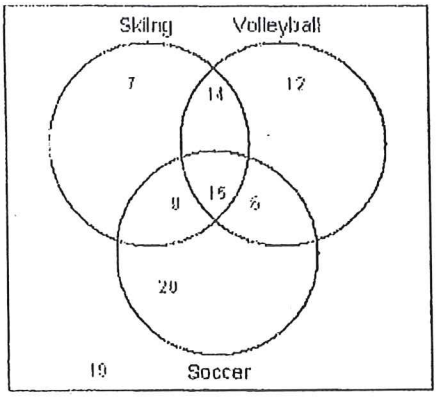
9. P(student plays football and hockey) $\frac{12}{80} = \frac{3}{20}$

10. P(Student does not play hockey) $\frac{59}{80}$

11. P(Student play football but not basketball) $\frac{35}{80} = \frac{7}{16}$

12. P(Student plays hockey but not football) $\frac{9}{80}$

13. P(Student does not play a sport) $\frac{14}{80} = \frac{7}{40}$



P(Soccer)

P(Volleyball)

P(Soccer or Volleyball)

P(Soccer and Volleyball)

P(Soccer, but not Volleyball)

P(Do not Ski, play Soccer, or Volleyball)

In a standard deck of cards, one card is drawn. Find the following probabilities:

1. P(heart) = $\frac{13}{52} = \frac{1}{4}$

2. P(3 of hearts) = $\frac{1}{52}$

3. P(face card) = $\frac{12}{52} = \frac{3}{13}$

4. P(King or Queen) = $\frac{8}{52}$

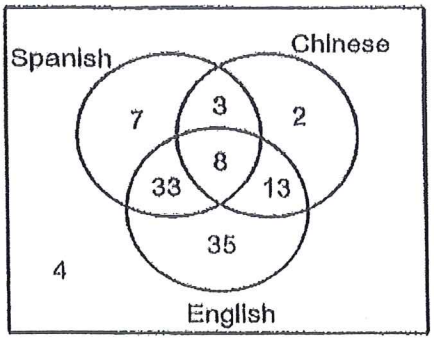
5. P(Club or King) = $\frac{13}{52} + \frac{4}{52} - \frac{1}{52} = \frac{16}{52} = \frac{4}{13}$

6. P(Ace or club) = $\frac{4}{52} + \frac{13}{52} - \frac{1}{52} = \frac{16}{52} = \frac{4}{13}$

7. P(an even numbered card) = $\frac{20}{52} = \frac{5}{13}$

Probability Review and Venn Diagrams

Name _____



105 TOTAL

A group of exchange students were surveyed on if they spoke English, Chinese, or Spanish. The results are modeled in the Venn diagram above.
What is the probability that at random a student is picked:

Does not speak English $\frac{16}{105}$

Speaks only Spanish $\frac{7}{105} = \frac{1}{15}$

Speaks Chinese but not Spanish $\frac{15}{105} = \frac{1}{7}$

Speaks Spanish and Chinese $\frac{11}{105}$

Speaks English but not Spanish $\frac{48}{105} = \frac{16}{35}$

Speaks only English $\frac{35}{105} = \frac{1}{3}$

Given a standard deck of 52 cards, 3 cards are dealt <u>without replacement</u>. Using this situation, answer the questions below.

a) What is the probability that all three cards are queens? $P(Q) \cdot P(Q) \cdot P(Q)$
$= \frac{4}{52} \cdot \frac{3}{51} \cdot \frac{2}{50} = \frac{24}{132600} = \frac{1}{5525}$

b) Let the first card be the queen of hearts and the second card be the queen of diamonds. Is the probability of drawing the two cards independent? Explain. NO W/O REPLACEMENT
THE FIRST CARD BEING Q OF H (OR ANY CARD) AFFECTS THE PROBABILITY OF THE SECOND CARD DRAWN

c) If the first card is a queen, what is the probability that the second card will not be a queen?
$\frac{48}{51} = \frac{16}{17}$

d) If the first two cards are queens, what is the probability that you will be dealt three queens?
$\frac{2}{50} = \frac{1}{25}$

e) If two of the three cards are queens, what is the probability that the other card is not a queen?
$\frac{48}{50} = \frac{24}{25}$ COULD BE ORDERED IT IS $\frac{4}{52} \cdot \frac{3}{51} \cdot \frac{48}{50} = \frac{576}{132600}$
$+ \frac{4}{52} \cdot \frac{48}{51} \cdot \frac{3}{50} = \frac{576}{132600} = \frac{1728}{132600}$ OR $\frac{72}{5525}$
$+ \frac{48}{52} \cdot \frac{4}{51} \cdot \frac{3}{50} = \frac{576}{132600}$