

Answer these 7 questions about probability.

1. The numbers from 1-30 are in a bag. You will randomly take out one of the numbers. Find each probability as a fraction without reducing.

a) $P(\text{Factor of } 20) =$

$$\frac{6}{30}$$

FAV OUTCOMES:

1, 2, 4, 5, 10, 20

b) $P(\text{Multiple of } 6) =$

$$\frac{5}{30}$$

FAV OUTCOMES:

6, 12, 18, 24, 30

c) $P(\text{Odd and multiple of } 7) =$

FAV OUT COMES:

$$\frac{2}{30}$$

MULT 7: 7, 14, 21, 28

d) $P(\text{Even or factor of } 12) =$

$$\frac{17}{30}$$

EVENES: 2, 4, 6, 8, 10, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30

15 #s

FACTORS OF 12: 1, 2, 3, 4, 6, 12

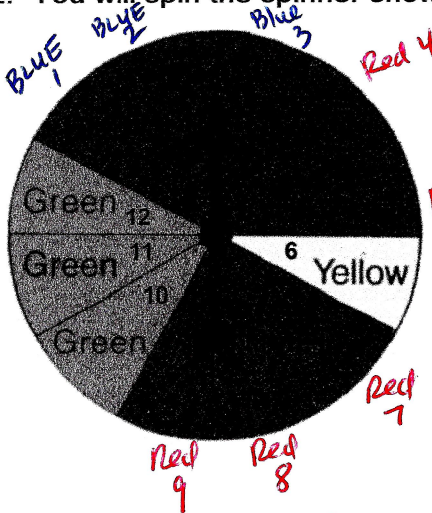
6 #s

#s appearing in both: 2, 4, 6, 12

4 #s

$$\text{FAV OUTCOMES} = 15 + 6 - 4 = 17$$

2. You will spin the spinner shown once. Find each probability as a fraction without reducing.



a) $P(\text{Multiple of } 3) =$

$$\frac{4}{12}$$

FAV OUTCOMES:
3, 6, 9, 12

b) $P(\text{Red or even}) =$

$$\frac{9}{12}$$

Red = 5

even = 6

that are both = 2

$$\text{FAV OUTCOMES} = 5 + 6 - 2 = 9$$

c) $P(\text{Odd and Blue}) =$

$$\frac{2}{12}$$

FAV OUTCOMES

BLUE 1 & Blue 3 = 2

d) $P(\text{Green or Yellow}) =$

$$\frac{4}{12}$$

Green = 3

Yellow = 1

BOTH = 0

$$\text{FAV OUTCOMES} = 3 + 1 - 0 = 4$$

3. People were asked to pick their single favorite music. The results of the survey are shown in the table. A person is picked at random. Find each probability as a fraction without reducing.

	Rock	Hip-Hop	Classical	Country	Total
Teens	13	40	3	8	64
Adults	37	5	6	11	59
Total	50	45	9	19	123

a) $P(\text{Adult and Country}) = \frac{11}{123}$

b) $P(\text{Rock or Classical}) = \frac{59}{123}$
 $\# \text{ Rock} = 50$
 $\# \text{ CLASSICAL} = 9$
 $\# \text{ THAT ARE BOTH} = 0$

FAY OUTCOMES = $50 + 9 - 0 = 59$

c) $P(\text{Country and Teen}) = \frac{8}{123}$

d) $P(\text{Hip-Hop or Adult}) = \frac{99}{123}$
 $\# \text{ HIP-HOP} = 45$
 $\# \text{ ADULT} = 59$
 $\# \text{ THAT ARE BOTH} = 5$

FAY OUTCOMES = $45 + 59 - 5$
 $= 99$

4. Use the data from problem #3. If 80 more people are surveyed predict the number that will pick Country as their favorite music. Round to the nearest whole number.

Answer = 12 people

$$p(\text{COUNTRY}) = \frac{19}{123}$$

OF NEXT 80 people:

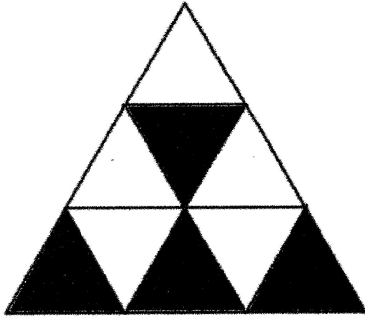
$$\frac{19 \text{ COUNTRY}}{123 \text{ TOTAL}} = \frac{X \text{ COUNTRY}}{80 \text{ TOTAL}}$$

$$X = 12.36$$

$$\approx 12 \text{ people}$$

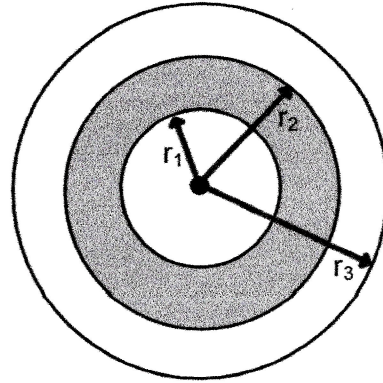
For 5 to 7 find the probability that a dart hits each target and lands in the shaded region. Give answers as a percent to the nearest hundredth.

5. $P(\text{Shaded Region}) = 44.44\%$



$$\frac{\# \text{ SHADED } \Delta's}{\# \text{ SMALL } \Delta's \text{ TOTAL}} = \frac{1}{4}$$

6. $P(\text{Shaded Region}) = \frac{39\pi}{121\pi} = 32.23\%$



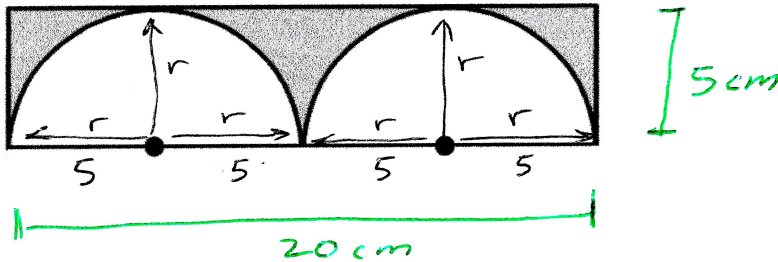
The length of each radii: $r_1 = 5, r_2 = 8, r_3 = 11$

$$\text{TOTAL AREA} = \pi(r_3)^2 = \pi(11)^2 = 121\pi$$

$$\begin{aligned} \text{SHADED AREA} &= (\text{circle 2}) - (\text{circle 1}) \\ &= \pi(r_2)^2 - \pi(r_1)^2 \\ &= \pi(8)^2 - \pi(5)^2 \\ &= 64\pi - 25\pi \\ &= 39\pi \end{aligned}$$

7. $P(\text{Shaded Region}) = 21.46\%$

Two semicircles are inscribed in a rectangle. The radius of each semicircle is 5 cm.



$$\text{TOTAL AREA} = \text{Area Rectangle} = (20\text{cm})(5\text{cm}) = 100 \text{ cm}^2$$

$$\begin{aligned} \text{Shaded Area} &= (\text{Rect}) - (1 \text{ whole circle}) = 100 - \pi(5)^2 \\ &= 100 - 25\pi \end{aligned}$$

$$p(\text{shaded area}) = \frac{100 - 25\pi}{100} \approx 21.46\%$$