Probability > 7

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Probability theory

Source: udemy.com

Master the Probability and Statistics Concepts by Solving 100+ Problems (Video 5)

Instructor: Sandeep Kumar

If 2 dice are rolled, what is the probability of gettig a sum of numbers greater than 7?

Visually assisted solutions (Theoretical)

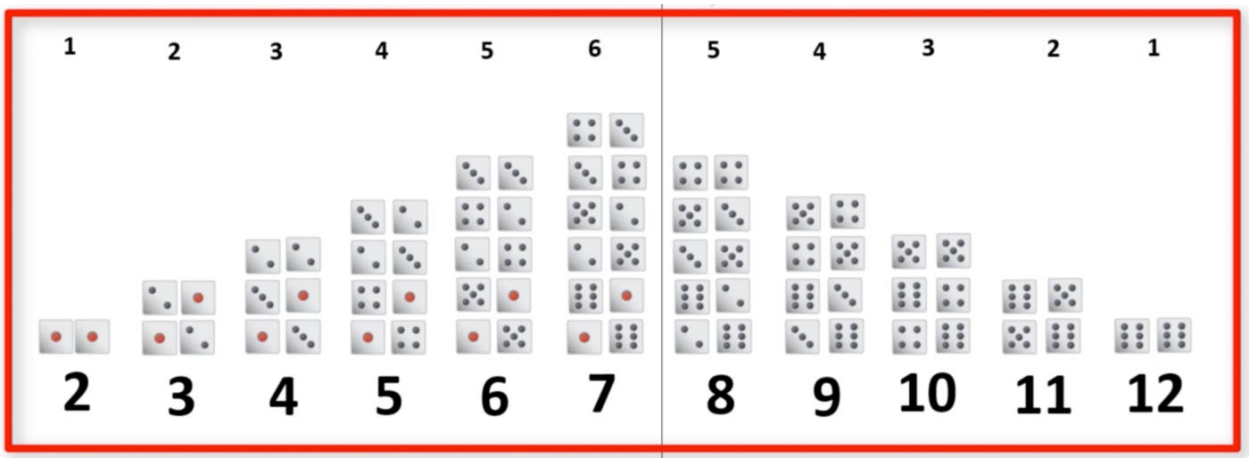

Figure 1: Figure 1

result = pairs to right of vertical line = 15

total pairs = 36

Probability of result > 7 = result / total pairs = 15/36 = 0.4167

result = red pairs = 15

total pairs = 36

Probability of result > 7 = result / total pairs = 15/36 = 0.4167

{6,1}	{6,2}	{6,3}	{6,4}	{6,5}	{6,6}
{5,1}	{5,2}	{5,3}	{5,4}	{5,5}	{5,6}
{4,1}	{4,2}	{4,3}	{4,4}	{4,5}	{4,6}
{3,1}	{3,2}	{3,3}	{3,4}	{3,5}	{3,6}
{2,1}	{2,2}	{2,3}	{2,4}	{2,5}	{2,6}
{1,1}	{1,2}	{1,3}	{1,4}	{1,5}	{1,6}

Figure 2: Figure 2

Computer assisted solution with R

```
die <- c(1:6)
n <- 1000
seed = 11235
set.seed(seed)
one <- sample(die, size=n, replace=TRUE)
two <- sample(die, size=n, replace=TRUE)
Total <-  one+two
success <- ifelse(Total >7,1,0)
round(mean(success),3)
```

```
## [1] 0.425
```

Law of large numbers

The larger the number of trials, the closer the experimental proobability will be to the expected/theoretical value.

```
n <- 10000
set.seed(seed)
one <- sample(die, size=n, replace=TRUE)
two <- sample(die, size=n, replace=TRUE)
Total <-  one+two
```

```
success <- ifelse(Total >7,1,0)
round(mean(success),3)
```

```
## [1] 0.417
```

Questions

1. At what age can a child be expected to understand the visually assisted analysis?
2. At what age can a child be expected to understand the computer assisted analysis?

Let's experiment! The truth is out there! Can we find it?

```
library(linguisticsdown)
library(htmlwidgets)
dice <- "dice.gif"
include_graphics2(dice)
```

View gif at dice.gif

Take care to only collect unbiased data.

These dice must be loaded, since every toss results in"snake-eyes".