

1. There are 100 points on a circle. Find the number of different

(a) line segments these points determine. $\binom{100}{2} = 4950$

(b) triangles these points determine. $\binom{100}{3} = 161\,700$

(c) 5-sided polygons these points determine. $\binom{100}{5} = 75\,287\,520$

2. Find the present value of \$ 2000, five years from now. Assume an annual compound interest of 7%, compounded

(a) monthly \$ 1410.81

(b) daily \$ 1409.42

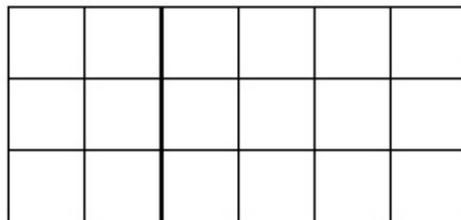
(c) continuously \$ 1409.38

3. Translate a 20% discount rate to interest rate. 25%

4. We borrowed \$2000 with a simple annual interest rate of 11%, for a year. After 5 months, we make a partial payment of \$750. After an additional 5 months, we make another partial payment of \$800. How much do we owe at the end of the year? \$ 614.22

5. The complement of an angle is 5 times the angle. Find the angle. 15°

6. How many rectangles are there on the picture below? 126



7. We placed \$1200 into a bank account with an annual compound interest rate of 8%. How much money do we have in the account after 15 years if the bank compounds interest

(a) annually \$ 3806.60

(b) monthly \$ 3968.31

(c) daily \$ 3983.61

(d) continuously \$ 3984.14

8. We roll two a die twice. Find the probability of each of the following events.

(a) The sum of the numbers rolled is 8. $\frac{5}{36}$

(b) The product of the two numbers rolled is 7. 0

- (c) We roll the same number twice. $\frac{1}{6}$
- (d) The difference between the numbers rolled is 3. $\frac{1}{6}$
- (e) The product of the two numbers rolled is odd. $\frac{1}{4}$
9. We toss a coin six times. What is the probability that we get an equal number of heads and tails? $\frac{\binom{6}{3}}{2^6} = \frac{5}{16}$
10. We asked 150 people if they watch the TV shows the Daily Show with Jon Stewart, the BBC News, or the Colbert Report.
- 89 watch the Daily Show, 90 watch BBC News, and 96 watch the Colbert Report. 63 watch Daily Show and BBC News, 72 watch the Daily Show and Colbert Report, and 71 watch BBC News and Colbert Report. 50 watch all three shows.
- (a) How many people watch exactly two TV shows out of these three? 56
- (b) If we randomly pick a person that watch the Daily Show, what is the probability that he/she also watches BBC News? $\frac{63}{89}$
- (c) If we randomly pick a person that watch the Daily Show or BBC News, what is the probability that he/she watches all 3 shows? $\frac{50}{116} = \frac{25}{58}$