

Review Assignment

- Page 680 = #1 – 3, 6 – 17
- Page 684 = #1 – 4
- Page 758 = 1 – 8, 15 – 23,
25 – 27, 29 – 40, 53 – 63,
76 – 77, 79 – 82,
107 – 108

Page 680

Problem 1

$\angle 3$ – right angle because it's the same as the one marked with a box

Problem 2

$\angle 5$ is obtuse (more than 90°)

Problem 3

$\angle 4$ and $\angle 6$ – vertical angles are across from each other in an X (when lines intersect)

Problem 6

$\angle 2$ – complement means add up to 90° ... $\angle 1$ and $\angle 2$ together make a right angle

Problem 7

$\angle 5$ – supplement means add up to 180° ... $\angle 6$ and $\angle 5$ together make a line

Problem 8

$$180 - 115 = \underline{65^\circ}$$

Problem 9

$$90 - 41 = \underline{49^\circ}$$

Problem 10

$$90 - 73 = \underline{17^\circ}$$

Problem 11

$$180 - 46 = \underline{134^\circ}$$

Problem 12

- $m\angle 1 = 180 - 70 = \underline{110^\circ}$
- $m\angle 2 = \underline{70^\circ}$ (vertical angle with the marked angle)
- $m\angle 3 = \underline{110^\circ}$ (vertical angle with $\angle 1$)

Problem 13

- $\angle 2$, $\angle 5$, and $\angle 6$ all measure $\underline{42^\circ}$ (same as the one marked because of parallel lines)
- $\angle 1$, $\angle 3$, $\angle 4$, and $\angle 7$ all measure $180 - 42 = \underline{138^\circ}$

Problem 14

$$180 - 60 - 48 = \underline{72^\circ}$$

Problem 15

$$180 - 90 - 39 = \underline{51^\circ}$$

Problem 16

- $\angle 1 = 180 - 40 - 50 = \underline{90^\circ}$
- $\angle 2 = 180 - 90 = \underline{90^\circ}$
- $\angle 3 = 180 - 40 = \underline{140^\circ}$
- $\angle 4 = \underline{40^\circ}$ (vertical angles with the 40° angle marked in the picture)
- $\angle 5 = \underline{140^\circ}$ (vertical angles with $\angle 3$)

Problem 17

- Because it makes a line with the 115° angle, the angle next to 115 inside the triangle is $180 - 115 = 65^\circ$
- The angle at the bottom of the triangle is 35° because it is a vertical angle with the 35° marked in the picture.
- Because a triangle has 180° , $m\angle 1 = 180 - 65 - 35 = \underline{80^\circ}$
- Because it makes a line with the 115° angle, $m\angle 2 = 180 - 115 = \underline{65^\circ}$
- Because of parallel lines, $m\angle 3 = \underline{115^\circ}$ (same as the 115° angle that is marked)
- Because of vertical angles, $\angle 6$ is the same as $\angle 1$, so $m\angle 6 = \underline{80^\circ}$
- Because of parallel lines, $\angle 4$ and $\angle 6$ are the same, so $m\angle 4 = \underline{80^\circ}$
- Because $\angle 4$ and $\angle 5$ make a line $m\angle 5 = 180 - 80 = \underline{100^\circ}$

Page 684

Problem 1

- Complement ... $90 - 54 = \underline{36^\circ}$
- Supplement ... $180 - 54 = \underline{126^\circ}$

Problem 2

135° – angles that look alike when there are parallel lines are the same

Problem 3

$$180 - 40 - 70 = \underline{70^\circ}$$

Problem 4

- The angle next to the 100° angle (top of triangle) is $180 - 100 - 80^\circ$.
- The angle at the bottom left of the triangle is a vertical angle with the 65° that is marked, so it is 65°
- So, since there are 180° in a triangle, $m\angle 1 = 180 - 80 - 65 = \underline{35^\circ}$

Page 758

Problem 1

$$20 \times 40 = \underline{800}$$

Problem 2

$$4 \text{ colors, } 5 \text{ tips ... so } 4 \times 5 = \underline{20}$$

Problem 3

100 could win 1st prize; once a winner is selected 99 are left that could win second prize ... so $100 \times 99 = \underline{9900}$

Problem 4

5 choices on each problem, so $5 \times 5 \times 5$ or $5^3 = \underline{125}$

Problem 5

3 possibilities for each stock, so $3 \times 3 \times 3 \times 3 \times 3$ or $3^5 = \underline{243}$

Problem 6

$$5 \times 2 \times 2 \times 3 = \underline{60}$$

Problem 7

$$\frac{16!}{14!} = \frac{16 \cdot 15 \cdot 14 \cdot 13 \cdot 12 \cdot 11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1}{14 \cdot 13 \cdot 12 \cdot 11 \cdot 10 \cdot 9 \cdot 8 \cdot 7 \cdot 6 \cdot 5 \cdot 4 \cdot 3 \cdot 2 \cdot 1} = 16 \cdot 15 = 240$$

(everything from 14 down cancels)

Problem 8

$$\frac{800!}{799!} = \frac{800 \cdot 799 \cdot 798 \cdot 797 \cdot 1 \dots}{799 \cdot 798 \cdot 797 \cdot 1 \dots} = 800$$

(everything from 799 down cancels)

Problem 15

Combinations (order doesn't matter in cards)

Problem 16

Permutations (order matters, because they'll get different roles)

Problem 17

Combinations (order doesn't matter because they all get the same thing—attending the workshop)

Problem 18

There are several ways to do this, all of which are shown on the calculator screenshot below:

6 nPr 6	720
6!	720
6*5*4*3*2*1	720

(It would be permutations because "schedule" means "put in order".)

Problem 19

15 nPr 4	32760
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$$\text{or } \frac{15!}{(15-4)!} = \frac{15!}{11!} = 15 \cdot 14 \cdot 13 \cdot 12 = 32,760$$

Problem 20

10 nCr 4	210
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$$\begin{aligned} \text{or } \frac{10!}{4!(10-4)!} &= \frac{10!}{4! \cdot 6!} = \frac{10 \cdot 9 \cdot 8 \cdot 7}{4 \cdot 3 \cdot 2 \cdot 1} \text{ (since everything from 6 down cancels)} \\ &= \frac{10 \cdot 9 \cdot 7}{3} \text{ (since } 4 \times 2 = 8) \\ &= 10 \cdot 3 \cdot 7 \text{ (since 9 and 3 will cancel down to 3)} \\ &= 10 \times 3 \times 7 = \underline{\underline{210}} \end{aligned}$$

Problem 21

- 7 total letters
- 2 T's and 3 O's, so ... $\frac{7!}{2! \cdot 3!} = \frac{7 \cdot 6 \cdot 5 \cdot 4}{2 \cdot 1}$ (since everything from 3 down cancels)
 $= 7 \cdot 6 \cdot 5 \cdot 2 = 420$

7!/2!/3!
420

On a graphing calculator ...

Problem 22

Order doesn't matter, so combinations

20 nCr 3
1140

or ... $\frac{20!}{3!(20-3)!} = \frac{20!}{3! \cdot 17!} = \frac{20 \cdot 19 \cdot 18}{3 \cdot 2 \cdot 1} = \frac{6840}{6} = 1140$

Problem 23

"Arrange" means order matters, so permutations.

Two of the books have to be first and last, so you're really only arranging the other five.

Three different ways you could do this are shown on the screenshot below:

5 nPr 5
120
5!
120
5*4*3*2*1
120

Problem 25

If you're waiting to take off, you care about order, so this is permutations.

Since it's 5 airplanes, it's essentially the same problem as #23 ... **120**

Problem 26

Cards → Combinations

Two ways you can do this are shown below:

13 nCr 5
1287
13!/5!/(13-5)!
1287

Problem 27

Republicans **AND** Democrats

- Each of these is a combinations problem.
- AND means TIMES, so multiply to get the final answer.

12 nCr 5 * 8 nCr 4
55440

Problem 29

1 out of 6, so $\frac{1}{6} = .1666\dots$

Problem 30

Less than 5 would be 1, 2, 3, or 4 ... 4 out of 6, so $\frac{4}{6} = \frac{2}{3} = .666\dots$

Problem 31

Everything on a single die is less than 7 ... $\frac{6}{6} = 1$

Problem 32

Nothing on a die is greater than 6 ... $\frac{0}{6} = 0$

Problem 33

4 out of 52, so $\frac{4}{52} = \frac{1}{13}$ or about .0769

Problem 34

3 jacks, 3 kings, 3 queens, so 12 out of 52 ... $\frac{12}{52} = \frac{3}{13}$ or about .23

Problem 35

This means a 5, 6, or 7, so 12 out of 52 ... $\frac{12}{52} = \frac{3}{13}$ or about .23

Problem 36

1 out of 52, so $\frac{1}{52}$ or about .0192

Problem 37

There are 2 red aces (hearts and diamonds), so $\frac{2}{52} = \frac{1}{26}$ or about .0384

Problem 38

There are 30 total candies, so 15 out of 30 ... $\frac{15}{30} = \frac{1}{2} = .5$

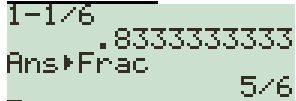
Problem 39

10 out of 30 ... $\frac{10}{30} = \frac{1}{3} = .333\dots$

Problem 40

5 out of 30 ... $\frac{5}{30} = \frac{1}{6} = .1666\dots$

Problem 53



1-1/6
Ans: .8333333333
Frac 5/6

Problem 54

$1 - \frac{3}{6} = \frac{3}{6} = \frac{1}{2} = .5$

Problem 55

$\frac{2}{6} = \frac{1}{3} = .333\dots$

Problem 56

$1 - \frac{2}{6} = \frac{4}{6} = \frac{2}{3} = .666\dots$

Problem 57

ALL numbers on a die are either less than 5 OR greater than 2 ... so 1 (100%)

Problem 58

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1-12/52
.7692307692
Ans+frac
10/13

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(You could also write this as $40/52$)

Problem 59

$$1 - \frac{13}{52} = \frac{39}{52} = \frac{3}{4} = .75$$

Problem 60

4 aces, 4 kings, so $\frac{8}{52} = \frac{2}{13}$ or about .1538

Problem 61

2 black 6's, 2 red 7's, so $\frac{4}{52} = \frac{1}{13}$ or about .0769

Problem 62

4 queens, 26 red cards, 2 red queens ... $\frac{4 + 26 - 2}{52} = \frac{28}{52} = \frac{7}{13} \approx .538$

Problem 63

13 clubs, 12 picture cards, 3 club pictures ... $\frac{13 + 12 - 3}{52} = \frac{22}{52} = \frac{11}{26} \approx .423$

Problem 76

4 queens, 48 not queens

- Odds against = 48 : 4 or 12 : 1
- Odds in favor = 4 : 48 or 1 : 12

Problem 77

20 possible winners, 1980 not

- Odds against = 1980 : 20 = 99 : 1

Problem 79

Yellow, then red (yellow 1st time AND red 2nd time)

$$\frac{2}{6} \times \frac{4}{6} = \frac{8}{36} = \frac{2}{9} = .\bar{2}$$

Problem 80

$$\frac{1}{6} \times \frac{1}{6} = \frac{1}{36} = .02\bar{7}$$

Problem 81

$$\frac{2}{6} \times \frac{2}{6} = \frac{4}{36} = \frac{1}{9} = .\bar{1}$$

Problem 82

$$\frac{2}{6} \times \frac{1}{6} \times \frac{3}{6} = \frac{6}{216} = \frac{1}{36} = .02\bar{7}$$

Problem 107

$$\frac{1 \cdot \frac{1}{4} + 2 \cdot \frac{1}{8} + 3 \cdot \frac{1}{8}}{8 + 4 \cdot \frac{1}{4} + 5 \cdot \frac{1}{4}} = 3.125$$

Problem 108

Part a

$$\frac{0 \cdot .9999995 + 10000}{00 \cdot .0000005} = .5$$

.. They pay out an average of 50¢ on each policy.

Part b

To make a profit of \$9.50, they should charge $.50 + 9.50 = \$10.00$ per policy.