

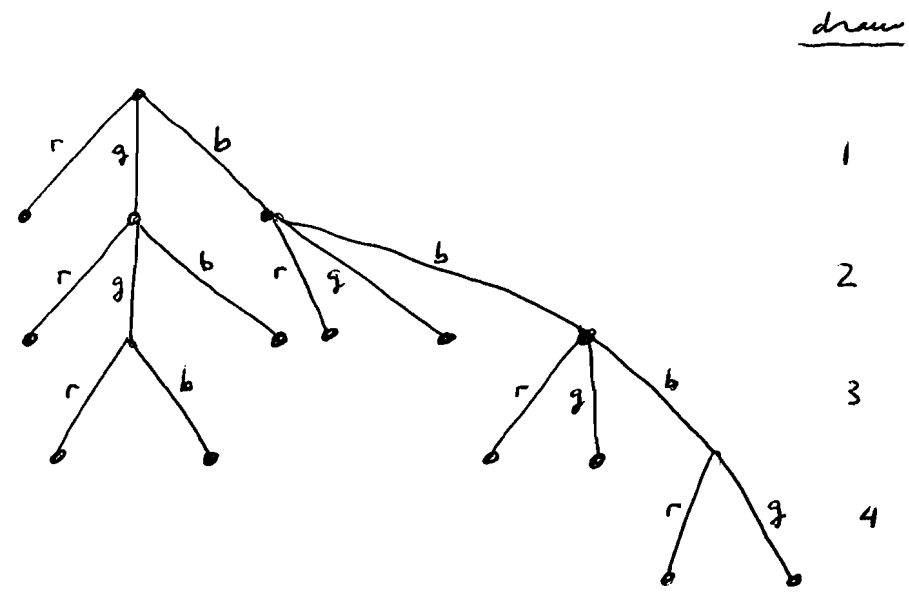
| Problem | Ans | Reason |
|---------|--|--|
| 1 | HHH THH HHT THT HTH TTH HTT TTT | |
| 2 | 5^{10} | Sample space is the Cartesian product $\underbrace{C \times C \times C \times \dots \times C}_{10}$ where C is a set with 5 elements |
| 3 | 120 | $8 \times 5 \times 3 = 120$ |
| 4 | 7 | Cooler : ddrrrr |
| | <u>Sample Space</u> dd drdr drr rdd rdrd rdr rr | <div style="text-align: right; margin-right: 20px;"><u>draw</u></div> |
| 5 | $\{0, 1, 2, 3, 4\}$ | |
| 6 | $\{2, 3, 4, \dots, 11, 12\}$ | |
| 7 | $\{0, 2, 4, 6\} \times \{0, 2, 4, 6\}$ | |

Problem Ans Reason

8 150 Product code has form $L_1 L_2 N_1 N_2$
 3 choices for L_1
 Given L_1 , 2 choices for L_2
 Given L_1, L_2 , 5 choices for N_1
 Given L_1, L_2, N_1 , 5 choices for N_2 .
 $3 \times 2 \times 5 \times 5 = 150$

9 84 $3 \times 4 \times 7 = 84$

10 11 Box r g g b b b



Sample space consists of the paths from the top of the diagram to a leaf

11 36 LA D C NY

$3 \times 4 \times 3 = 36$

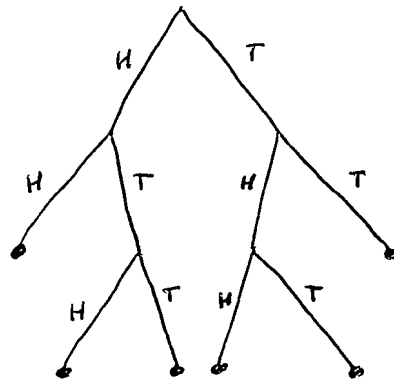
Problem

Ans

Reason

12

6



Sample space consists of the paths through the diagram from the top to a leaf

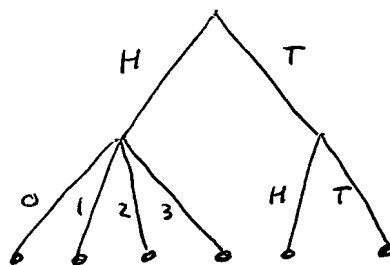
13

$$3^5 = 243$$

Sample space is the Cartesian product $C \times C \times C \times C \times C$ where $C = \{p, m, u\}$.

14

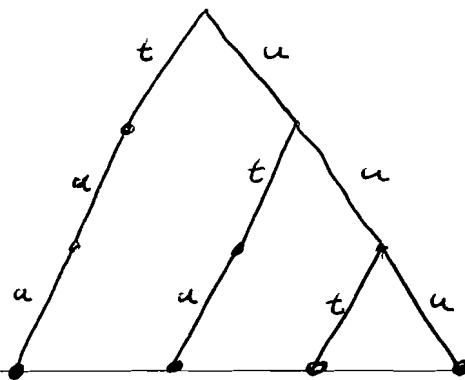
6



Sample space consists of the paths in the diagram from top to bottom.

15

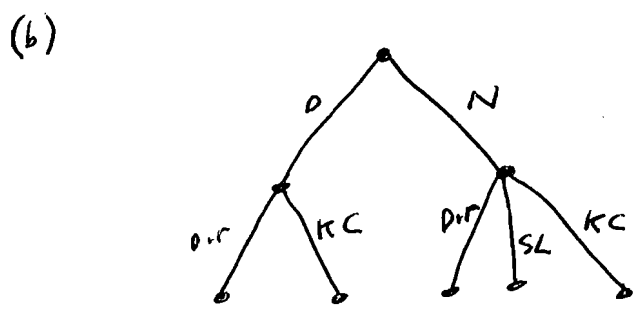
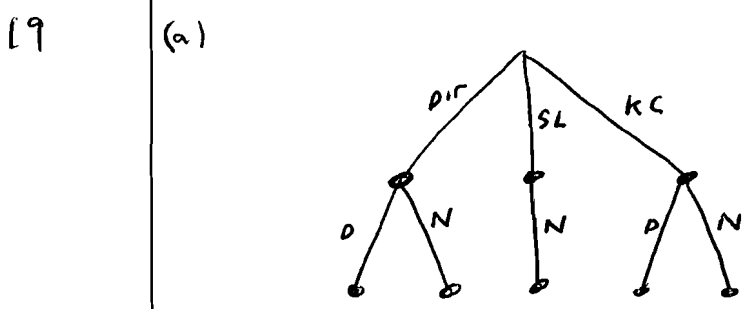
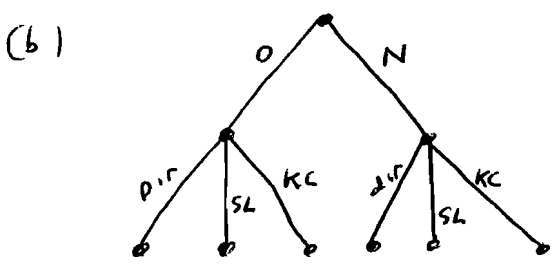
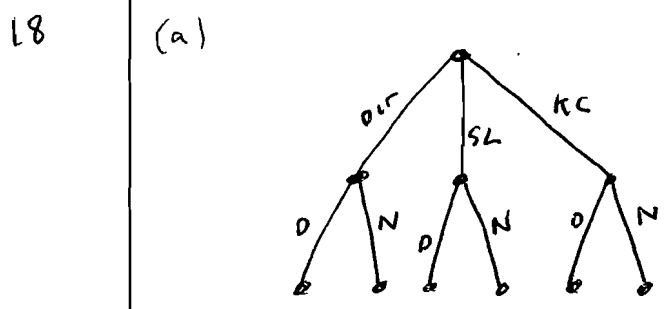
Sample space consists of paths in the diagram from top to bottom. This space has 4 elements.



| Problem | Ans | Reason |
|---------|-----|--------|
|---------|-----|--------|

16 6 just like problem 14

17 (a) $5^4 = 625$
 (b) $4^4 = 256$
 (c) $4^4 = 256$



Problem

Ans

Reason

20

4^8

Each of the 8 students has 4 choices
Sample space is the Cartesian product
 $C \times C \times C \times C \times C \times C \times C \times C$
where C has 4 elements.

21

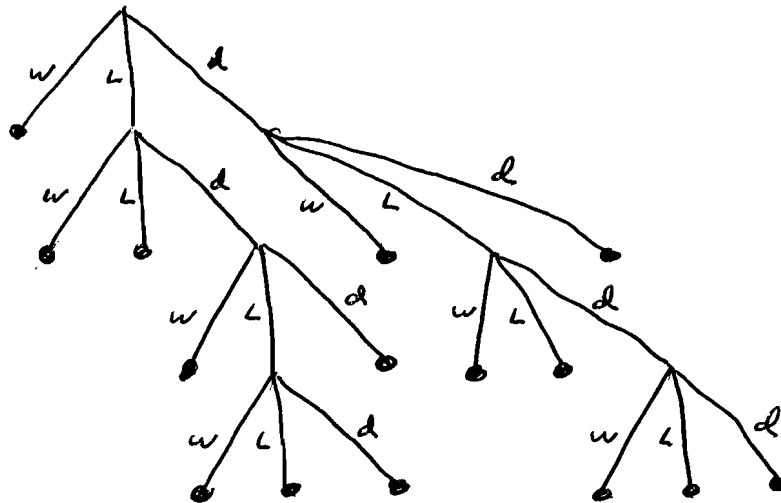
2460

| | | 1 | 2 | 5 | 6 | 9 | |
|------|---|---|---|---|---|---|---------|
| < 30 | 1 | x | ✓ | ✓ | ✓ | ✓ | 8 poss |
| | 2 | ✓ | x | ✓ | ✓ | ✓ | |
| | 5 | ✓ | ✓ | x | ✓ | ✓ | |
| > 30 | 6 | ✓ | ✓ | ✓ | x | ✓ | 12 poss |
| | 9 | ✓ | ✓ | ✓ | ✓ | x | |

$$\begin{aligned}
 &12 \times 5 \times 5 \times 5 + 8 \times 5 \times 4 \times 3 \times 2 \\
 &= 1500 + 960 \\
 &= 2460
 \end{aligned}$$

22

15



Sample space consists of paths in the diagram
from the top to a leaf

Problem

Ans

Reason

23

16

Sample space is a Cartesian product

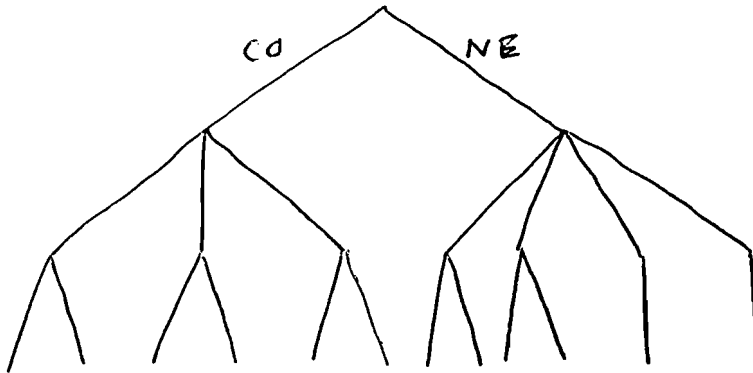
$$\{M1, M2\} \times \{\text{Yes, No}\} \times \{\text{Yes, No}\} \times \{\text{Yes, No}\}$$

Model Option 1 option 2 Option 3

$$2 \times 2 \times 2 \times 2 = 16$$

24

12



place

area

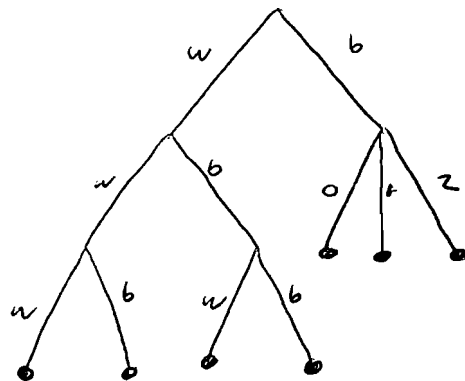
time

Sample space consists of a path in the diagram from top to bottom

25

7

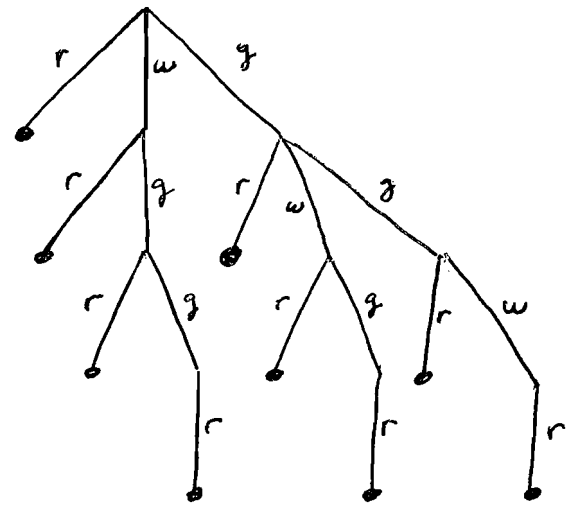
Box wwwbbb



Sample space consists of a path in the diagram from the top to a leaf

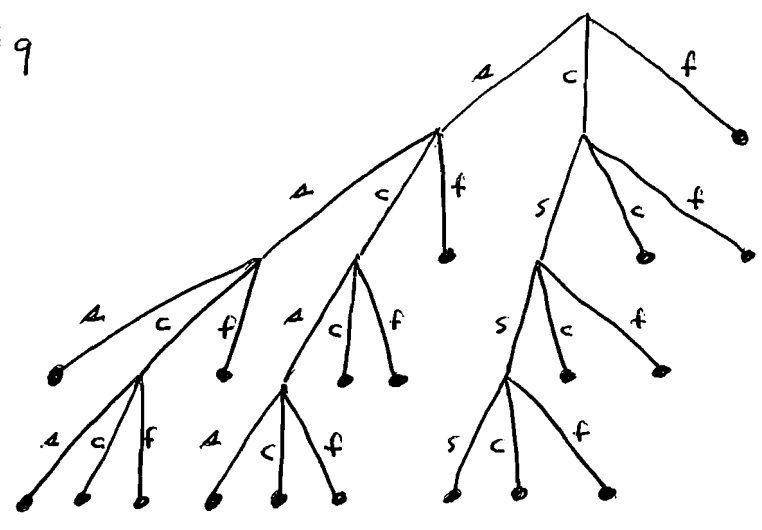
Problem Ans Reason

26 9 Box r w g g



Sample space consists of the paths in the diagram from the top to a leaf

27 19



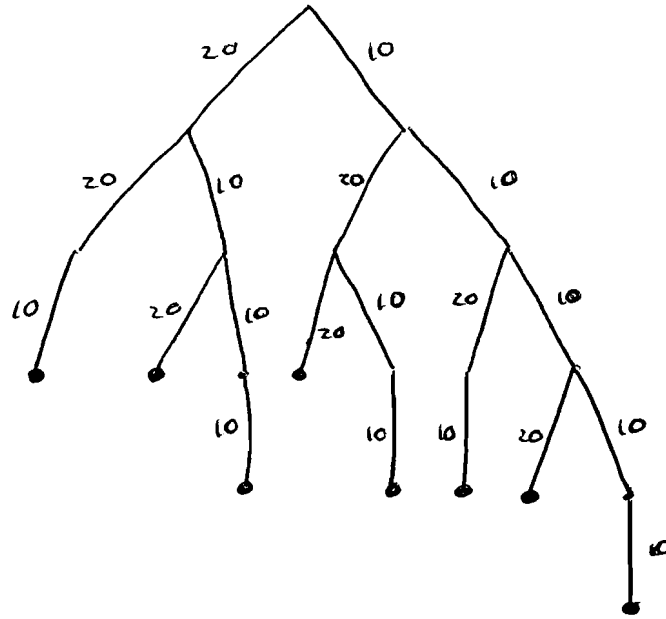
Sample space consists of the paths in the diagram, from the top to a leaf

Problem

Ans

Reason

28



Sample space consists of the paths in the diagram from the top to a leaf, This sample space has 8 elements.

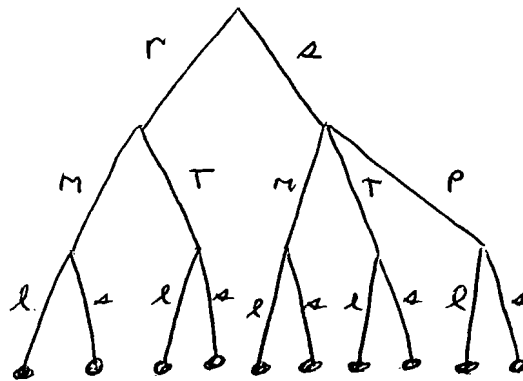
29

6

just like problem 14

30

10



Problem Ans Reason

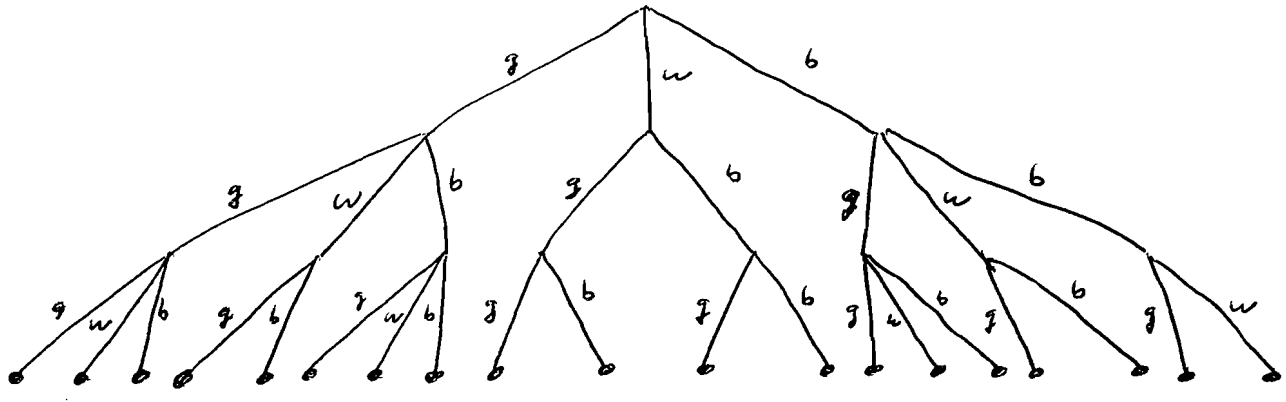
31 3645

pairs is $\frac{9 \cdot 8}{2} = 9 \cdot 4 = 36$

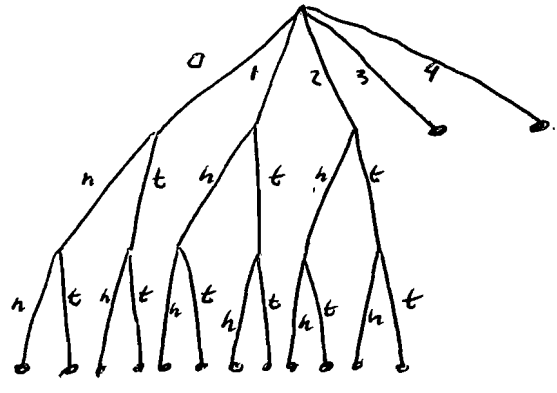
Ans = $9 \times 9 \times 9 + 9 \times 9 \times 36$
 $= 9 \times 9 \times 45 = 3645$

32 19

Box: ggg w bb



33 14



Problem

Ans

Reason

34

20

