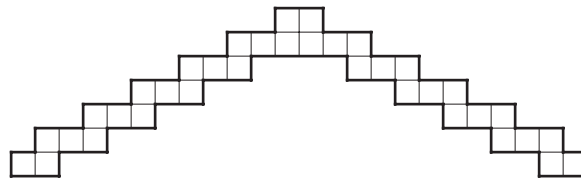


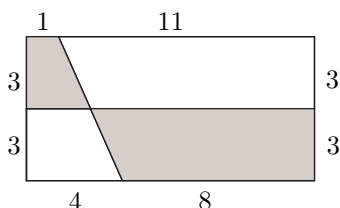
UBC Workshop Problems A

1. What time will it be 2005 hours from now?
2. Sylvia is strolling along Robson Street when someone grabs her purse and starts running away. The person is 25 metres ahead of her when Sylvia finally reacts and starts giving chase. Sylvia runs 5 metres for every 3 metres the thief runs. How many metres will Sylvia have to run before she catches up to the thief?
3. At a banquet, there was one serving dish of rice for every two people, one serving dish of meat for every three people, and one serving dish of fish for every four people. Altogether, 78 serving dishes of food were set out. How many people were at the banquet?
4. Alva left all her money to her three grandchildren, Beti, Cecil, and Delbert. Beti got half the money, plus \$1000. Cecil got half of what was left after that, plus \$2000. And Delbert got the remaining \$5000. What was the total amount of money Alva left?
5. The figure below was made by putting together 36 equal-sized squares. The area of the figure is 144 square centimetres. Find the perimeter of the figure.



6. Chris has \$100 more than Eric. After Chris spends \$52, he has seven times as much as Eric. How much does Eric have?
7. The greatest common factor of two numbers is 24. The least common multiple is 480. If one of the numbers is 96, what is the other number?
8. Show how to cut up a square into: (i) 9 squares; (ii) 10 squares; (iii) 11 squares.
9. There are 12 whole numbers that divide 200, namely 1, 200, and 10 others. Find the product of these 12 numbers.
10. A bubble tea shop carries three kinds of fruit: strawberry, mango, and pineapple. The owner of the shop allows her customers to have any combination of one or more of the above three fruits. Zero or more optional items (ice cream, coconut jelly, tapioca pearls) can be added to any bubble tea. How many different bubble teas can be ordered at this shop?

11. In how many different ways can 11 identical muffins be distributed among Alan, Beti, and Gamal if each must receive at least one muffin?
12. Alan went to Oregon (which has no sales taxes) and bought two shirts, a sweater, and a pair of shoes. The shoes cost \$10.00 more than the sweater. The sweater cost \$10.00 more than each shirt. The total bill was \$129.80. How much did the shoes cost?
13. Find the shaded area.



14. Twenty-seven $1 \times 1 \times 1$ dice are glued together to make a single cubical $3 \times 3 \times 3$ super die (die is the singular of dice). What is the smallest total number of dots that could appear on the six faces of this super die? (On a regular die, 1 and 6 are on opposite faces, also 2 and 5, also 3 and 4.)
15. If \mathcal{P} is a polygon, a *diagonal* of \mathcal{P} is a line that connects two corners of the polygon but which is not a side of the polygon. Let \mathcal{P} be a regular polygon with 17 sides. How many diagonals does \mathcal{P} have? Note for example that a regular polygon with 5 sides (a regular pentagon) has 5 diagonals, while a regular hexagon has 9 diagonals.
16. Candles A and B each burn at a uniform rate. But because A is thicker than B, it burns down more slowly. The candles were lit at 7:00. At 8:00, the candles were of the same height. At 11:00, candle B was finished. And at 12:00, so was A. At 7:00, A was 18 cm high. How high was B?
17. Find the largest positive integer n such that 2005^n is a factor of $2005!$. Note that

$$2005! = 1 \times 2 \times 3 \times 4 \times \cdots \times 2003 \times 2004 \times 2005.$$