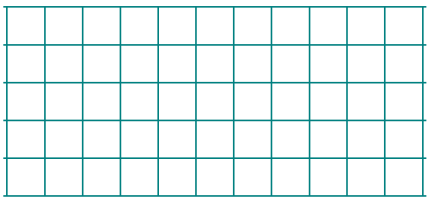
Lesson № 22

1 Solve the word problems:

A. A robot spent 3 hours to make 6 sets of chess pieces. How long will it take the robot to make 17 such sets?



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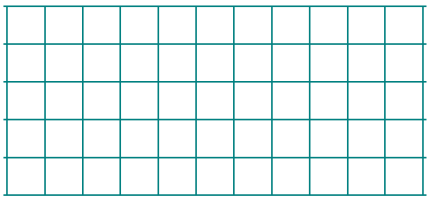
B. It takes a raft 6 hours to drift every 18 km downstream. How long will it take the raft to drift 24 km?



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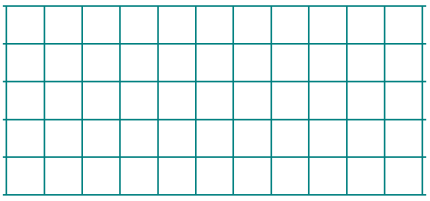
C. There were 18 apples and 24 oranges in a bad. Katie took ⅓ of those apples and ¼ of the oranges. How many fruit did she take?



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2 Solve equations:

$80 : (x - 2) = 8$

$80 : x - 2 = 8$

General fraction $\frac{m}{n}$.

3 Calculate:

1 cm + 1 cm =	1 m + 1 m =	$\frac{1}{7} + \frac{1}{7} =$	$\frac{1}{n} + \frac{1}{n} =$
1 cm × 3 =	1 m × 3 =	$\frac{1}{7} \times 3 =$	$\frac{1}{n} \times 3 =$

A fraction $\frac{1}{n}$ represents a unit broken into ***n*** equal parts.

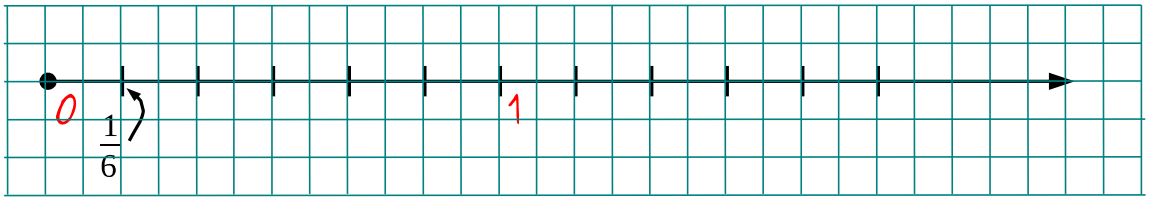
A fraction $\frac{m}{n}$ represents ***m*** fractions $\frac{1}{n}$ added together:

$$\frac{m}{n} = m \times \frac{1}{n}$$

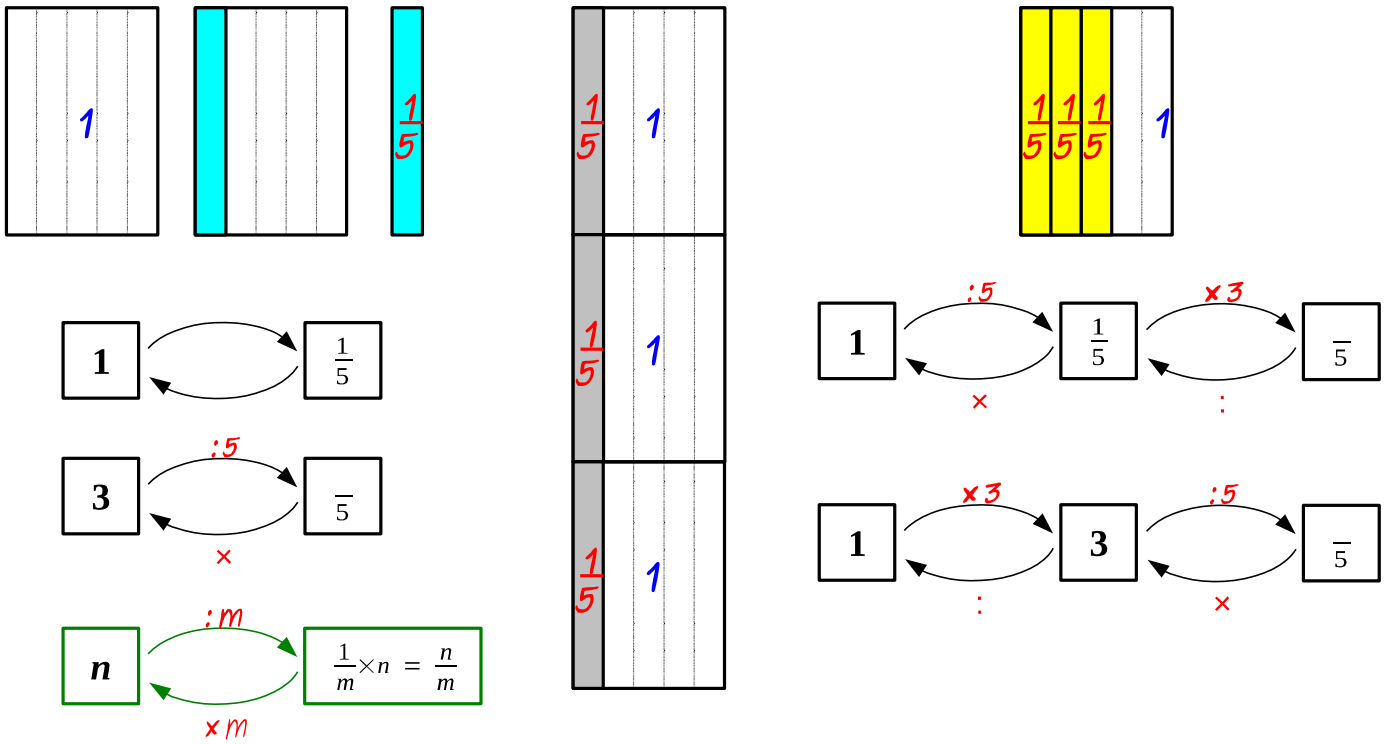
4 Calculate:

3 cm + 5 cm =	2 dm + 6 dm =	$\frac{2}{9} + \frac{5}{9} =$	$\frac{2}{n} + \frac{5}{n} =$
3 cm × 5 =	2 m × 7 =	$\frac{1}{11} \times 4 =$	$\frac{1}{n} \times 9 =$

5 Label the following fractions on the number line: $\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{12}$, $\frac{5}{12}$, $\frac{3}{4}$, $1\frac{1}{2}$, $1\frac{3}{12}$, $\frac{2}{3}$



6 Compare the yellow (Y) and the gray (G) areas on the drawing: Y ☐ G



The yellow and the gray rectangles have the same area but different shape.
These shapes illustrate two ways of making a fraction $\frac{m}{n}$:

$$\frac{m}{n} = \frac{1}{n} \times m = m : n$$

7 Fill in the blanks:

$\frac{1}{5} \times 3 = \frac{\square}{5} = 3 : 5$ $\quad \square \times 4 = \frac{4}{7} = \square : \square$ $\quad \frac{1}{9} \times \square = \frac{\square}{9} = 7 : \square$

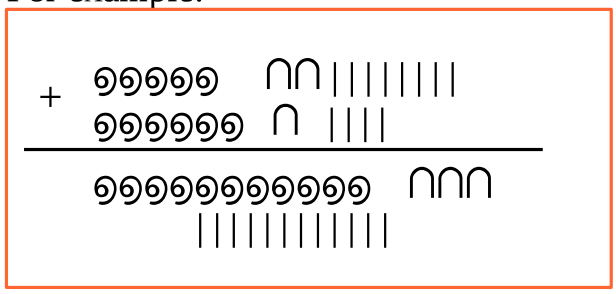
$\square \times 5 = \frac{\square}{6} = 5 : \square$ $\quad \frac{1}{8} \times 3 = \frac{\square}{\square} = \square : \square$ $\quad \frac{1}{\square} \times \square = \frac{\square}{5} = 3 : \square$

$\frac{1}{7} \times \square = \frac{4}{7} = \square : \square$ $\quad \frac{\square}{5} \times 2 = \frac{2}{5} = 2 : \square$ $\quad \frac{1}{8} \times 5 = \frac{\square}{\square} = 5 : \square$

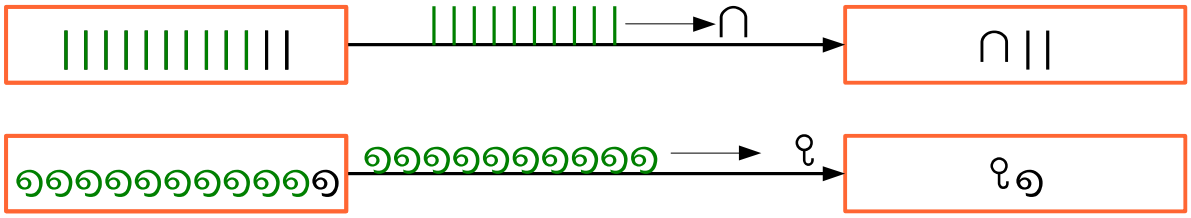
8 Addition and subtraction in ancient Egyptian symbols is similar to what they are in our numerical system.

Sometimes you have to regroup.

For example:



Number	Symbol	Description
1		Vertical stroke
10		Heel bone
100		Scroll
1000		Lotus flower
10,000		Pointing finger
100,000		Fish
1,000,000		Kneeling person



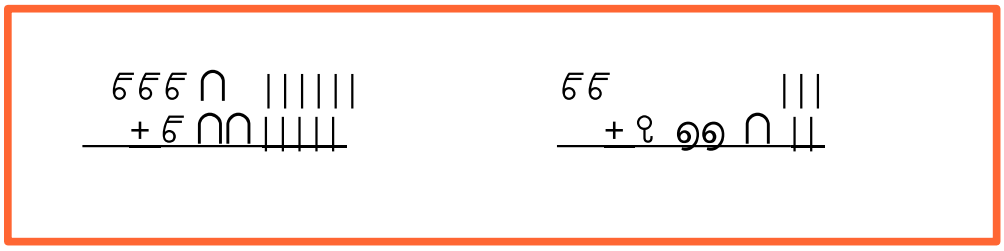
The answer is 11 hundreds, 3 tens, and 12 units.

Instead of 12 units we want to have 2 units and 1 ten.

Also, instead of 11 hundreds we want to have 1 thousand and 2 hundreds.

So the answer is really:

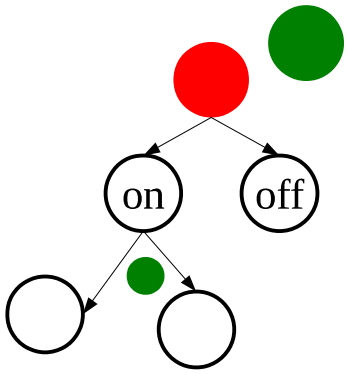
Calculate in Egyptian:



9 How many are there different ways to switch on/ off two light bulbs?

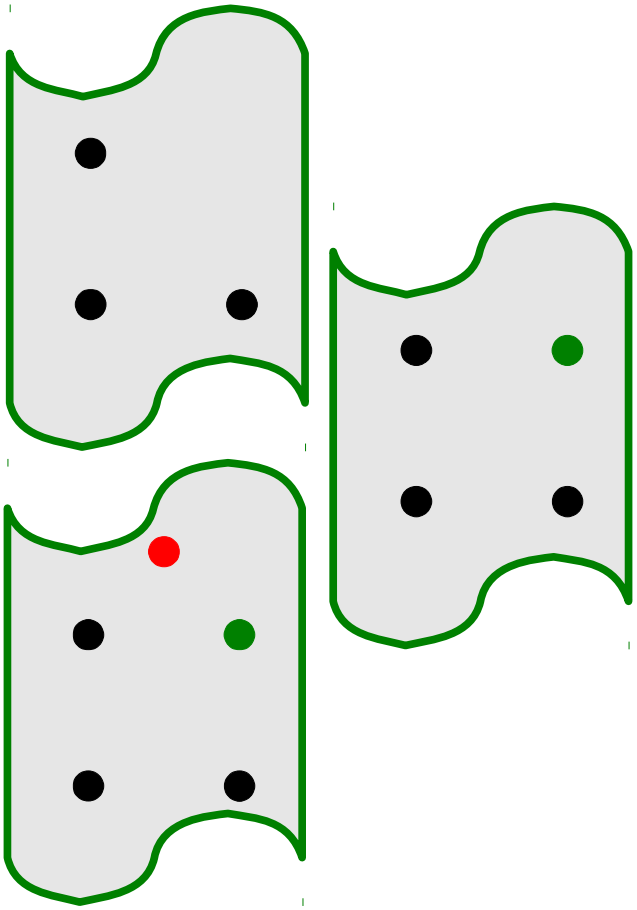
1. ◯◯ 2. ◯◯ 3. ◯◯

4. ◯◯ 5. ◯◯ 6. ◯◯



How many different ways did you find? _____

10 Complete graphs to answer the questions:



A. Three players have to play a group chess tournament. Each player must have a game with another one. How many games will be played?

_____

B. Four players have to play a group chess tournament. Each player must have a game with another one. How many games will be played?

_____

C. Five players have to play a group chess tournament. Each player must have a game with another one. How many games will be played?

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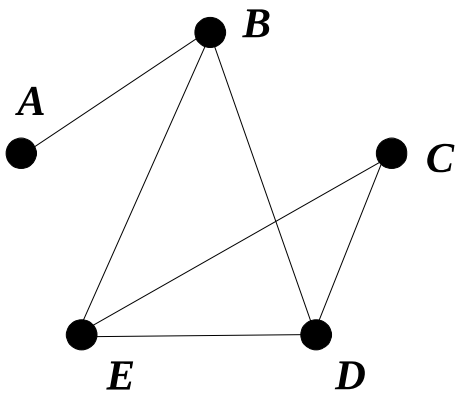
10 The following bus services connecting towns A, B, C, D, and E are available in both directions:



1. A – B : $5
2. D – C : $7
3. B – E : $4
4. B – D : $5
5. D – E : $4
6. C – E : 6

What is the cheapest way from A to C?