7th Kyu

算数検定

PROFICIENCY TEST
IN
PRACTICAL MATHEMATICS

Test Time : 50 minutes

Test Instructions

1. Make sure that you have the correct level (Kyu) test.
2. Do not open the booklet until you are told to do so.
3. Write your examinee number and name on this page.
4. Write your name, examinee number and other necessary information on the answer sheet.
5. You may use a ruler, protractor and compass. However, you may not use a calculator.
6. Turn off your cell phone and do not use it during the test.
7. Write your answers on the answer sheets provided.
8. If your answer contains a fraction, write the fraction in simplest form by reducing it to lowest terms.
9. Ask an examination supervisor if the printing on your problem sheets is unclear.
10. It is prohibited to disclose the problems to the general public.

Examinee Number	–	Name	

※Your personal information will be handled appropriately according to the "Handling of Personal Information" agreement that was approved at the time of registration.

公益財団法人
日本数学検定協会
The Mathematics Certification Institute of Japan

1 Calculate. (*Calculation skill*)

(1) $92 \div 4$

(2) $936 \div 52$

(3) $5 + 3 \times 7$

(4) $18 \div (2 + 4)$

(5) $4.19 + 3.57$

(6) $6.08 - 5.4$

(7) 3.7×8.4

(8) $53.32 \div 8.6$

(9) $\frac{1}{4} + \frac{3}{5}$

(10) $1\frac{1}{2} - \frac{2}{7}$

(11) $\frac{2}{5} + \frac{2}{9} + \frac{4}{15}$

(12) $\frac{11}{12} - \frac{3}{8} + \frac{1}{4}$

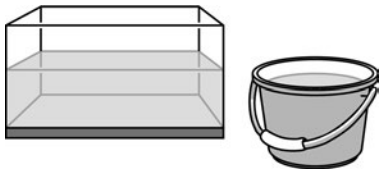
2 Fill in the blanks with numbers.

(13) How many 10 millions are in 2700000000? ☐

(14) The sum of five 0.1s and nine 0.01s is ☐.

(15) 0.123 multiplied by 100 equals ☐.

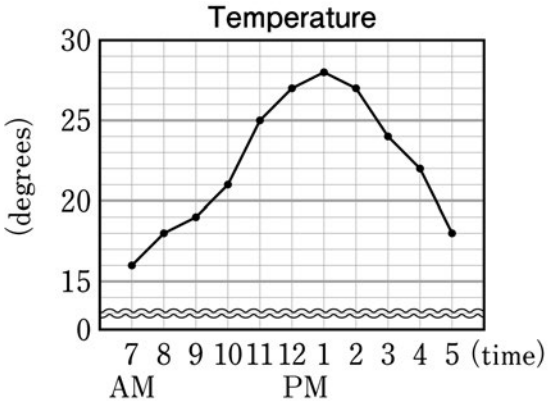
3 A tank contains 8.35 L of water and a bucket contains 4.6 L of water.



(16) How many more L of water are there in the tank than in the bucket?

(17) All the water in the bucket is poured in the tank. How many L of water are now in the tank?

4 The line graph shows the temperatures of a city in a day. (*Statistical skill*)



(18) Find the temperature, in degrees, at 9 am.

(19) The greatest temperature drop occurs during which one-hour period? Choose one from the following.

① Between 1 pm to 2 pm

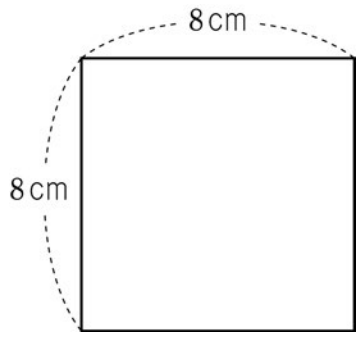
② Between 2 pm to 3 pm

③ Between 3 pm to 4 pm

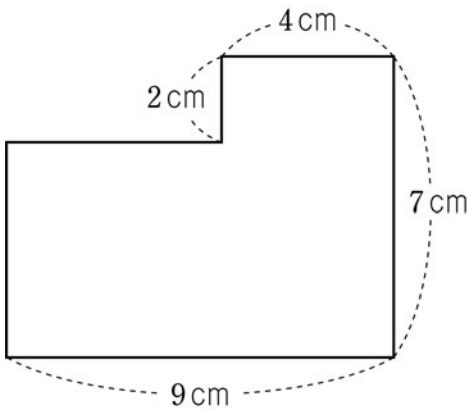
④ Between 4 pm to 5 pm

5 Find the area, in cm^2, of each of the following figures. Include units in your answer. Note that all angles are right angles. (*Measurement skill*)

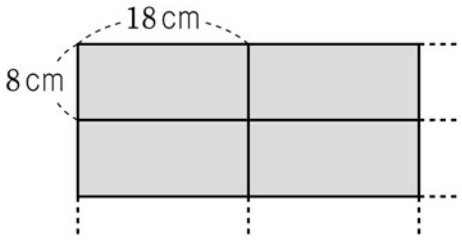
(20)



(21)



6 There are many rectangular tiles of length 18 cm and width 8 cm. A square is formed by arranging several of these rectangles without rotationg them, without any spaces between them and without the rectangles overlapping. Answer the following when making as small a square as possible.



(22) Find the length, in cm, of the side of the square.

(23) How many tiles are used to make the square?

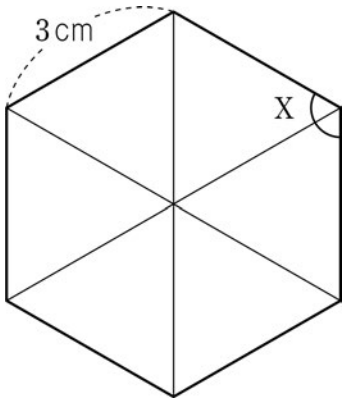
7 Alice walks at a constant speed of 80 m per minute.

(24) When she walks for 3 minutes, how long, in m, does she walk?

(25) How many minutes does it take for her to walk 2000 m? Write the steps leading to your answer.

(26) Convert her walking speed to its equivalent in km per hour.

8 The figure shows a regular hexagon with sides of length 3 cm.



(27) Find the length, in cm, of the perimeter.

(28) Find the measure of angle X.

9 Given a product from 1 to a certain integer, we consider how many times it can be divided by 2 or 3. For example, the product of integers from 1 to 5 can be expressed as

$$\begin{aligned} 1\times 2\times 3\times 4\times 5 &= 1\times 2\times 3\times (2\times 2)\times 5 \\ &= 1\times 2\times 3\times 2\times 2\times 5. \end{aligned}$$

Since "$\times 2$" appears three times, the product can be divided by 2 three times. Similarly, since "$\times 3$" appears once, the product can be divided by 3 once. Note that the quotient when dividing by 2 or 3 must be an integer.

(*Organizing skill*)

(29) How many times can the product of integers from 1 to 8 be divided by 2?

(30) How many times can the product of integers from 1 to 16 be divided by 3?