6th 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.

1 Calculate. (*Calculation skill*)

(1) 17.8×0.65

(2) $2.7 + 1.26 \div 0.3$

(3) $\dfrac{3}{4} + 1\dfrac{1}{6}$

(4) $\dfrac{11}{12} - \dfrac{3}{8}$

(5) $\dfrac{3}{14} \times 7$

(6) $\dfrac{8}{9} \div 6$

(7) $\dfrac{8}{25} \times \dfrac{5}{12}$

(8) $\dfrac{24}{35} \div \dfrac{20}{21}$

2 Answer the following.

(9) Find the greatest common factor (GCF) of 24 and 40.

(10) Find the least common multiple (LCM) of 18, 27 and 45.

3 Write each of the following ratios in simplest form.

(11) $30 : 36$

(12) $5.6 : 1.6$

4 Fill in the blanks with numbers.

(13) 0.3709 multiplied by 100 equals $\boxed{}$.

(14) The decimal representation of $\dfrac{1}{4}$ is $\boxed{}$.

(15) $3 : 8 = 15 : \boxed{}$

5 Patrick went to a farm with his family and picked grapes. Patrick picked $2\frac{1}{6}$ kg of grapes, his father picked $1\frac{2}{5}$ kg of grapes and his mother picked $1\frac{5}{9}$ kg of grapes.

(16) Find the total weight, in kg, of grapes that Patrick and his father picked.

(17) By how much heavier, in kg, is the weight of grapes that Patrick picked than the weight of grapes that his mother picked?

6 The table contains information on the highest temperatures and lowest temperatures in a city from Monday to Friday.

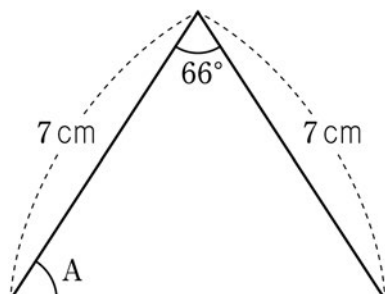|	Monday	Tuesday	Wednesday	Thursday	Friday
Highest temperature (℃)	24	26	28	27	23
Lowest temperature (℃)	19	21	22	20	

(18) Find the average temperature of the highest temperatures over the five days.

(19) The average temperature of the lowest temperatures over the five days is 20.6℃. Find the lowest temperature on Friday.
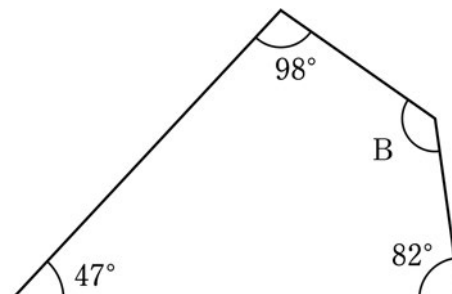
7 Find the measures of angles A and B. Include units in your answer.
(*Measurement skill*)

(20)   Isosceles triangle

7 cm   66°   7 cm
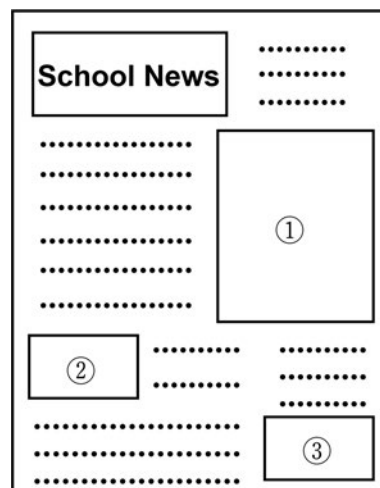
A

(21)   Quadrilateral

98°

B

82°

47°

8 Fran cooks rice using 180 mL of uncooked rice and 216 mL of water.

(22)   Express the ratio of the volume of uncooked rice to the volume of water in simplest form.

(23)   If Fran uses 400 mL of uncooked rice with the same ratio as (22), how many mL of water are needed?

9   There are five photos, A, B, C, D and E.
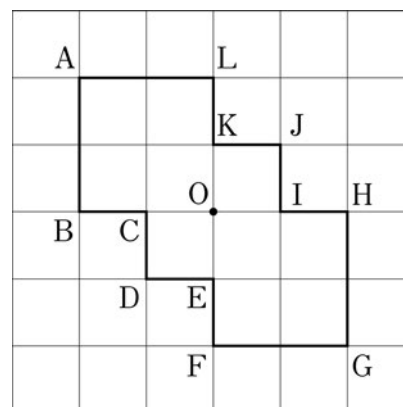
(24)   How many different ways can you choose three photos from the five photos?

(25)   The figure shows a school newspaper. Three photos A, B and C are put on the school newspaper in spaces ①, ② and ③. How many different ways can the three photos be arranged in the spaces?

10   The figure has axes of symmetry and a point of symmetry, denoted by O.

(26)   Find the side that is symmetric to side AB with respect to point O.

(27)   If the length of line AO is 4 cm, find the length, in cm, of line AG.

(28)   Draw all the lines of symmetry on the answer sheet using a ruler.
                             (*Construction skill*)

11 Emily, Kate and Linda play a game on stairs stepping up and down according to the following rules.

① Three people stand on the middle step.

② Each of them picks one card from a box containing the five cards 1, 2, 3, 4, 5.

③ Comparing the numbers they picked, the person who has the greatest number goes up one step, the person who has the next greatest number stays in the same step, and the person who has the least number goes down one step.

④ They replace their cards in the box.

⑤ They repeat the procedure from ② to ④ three more times.

Answer the following when they play this game two times.

(*Organizing skill*)

(29) Table 1 shows the results of the first game. For each of the following sentences, for the three people at the end of the game, write ○ if it is correct and write × if it is wrong.

Table 1

	1st	2nd	3rd	4th
Emily	1	5	2	1
Kate	4	4	3	5
Linda	2	3	1	4

A. Emily is on the lowest step among the three.

B. Kate is 5 steps higher than Linda.

C. Linda is on the same step as where she started.

D. Kate has never gone down any step.

(30) Table 2 shows the partial results of the second game. After the game, three people stand on the same step. Find the number on the card of Linda's fourth pick.

Table 2

	1st	2nd	3rd	4th
Emily	3	1	5	4
Kate	5	2	4	2
Linda	4			