

1 Write the number that fits the box.

$$(1) (7+6) \times 7 - 7 \div \frac{1}{6} = \boxed{}$$

$$(2) 1.01 \times 1.01 - 0.99 \times 0.99 = \boxed{}$$

$$(3) \frac{\frac{3}{8}}{\frac{3}{8} + \frac{9}{16} + \frac{27}{64}} = \boxed{}$$

$$(4) 2 - \boxed{} \div 2 \times 5 = 1$$

$$(5) 2025 = 3 \times 8 \times 8 \times 8 + \boxed{} \times 8 \times 8 + 5 \times 8 + 1$$

$$(6) \frac{1}{8} \text{ kg} + \frac{1}{8} \text{ g} = \boxed{} \text{ mg}$$

2 Write the number that fits the box.

(1) 0.1 is times 0.002.

(2) There are 8 "100 g balls", 50 "200 g balls", 28 "300 g balls", and 14 "400 g balls".
The average weight of the balls is g.

(3) The smallest number among 0.5 and $\frac{22}{45}$ and $\frac{23}{47}$ is .

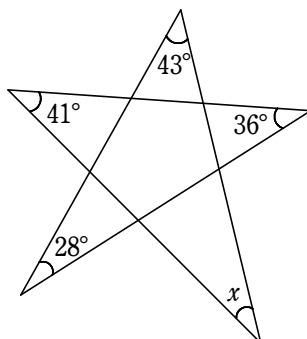
(4) $1 \times 1 \times 1 + 2 \times 2 \times 2 + 3 \times 3 \times 3 + \dots + 9 \times 9 \times 9 =$

(5) Dissolving 250 g of salt in 1 kg of water produces % brine.

(6) Mr. A planned to leave his house at 8:00 a.m. and arrive at a bus stop 1.6 km from his house at 8:20 a.m. However, because the weather was rainy, he walked at a speed of meters per minute under an umbrella and arrived at the bus stop 5 minutes later than planned.

(7) When trees are planted every 20 m around a circular pond with a circumference of 0.2 km, trees are needed.

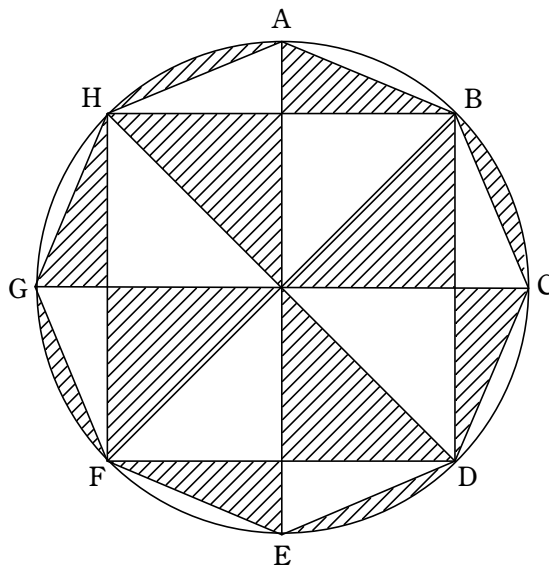
(8) In the figure below, the magnitude of angle x is °.



3 (1) Select all correct answers from the following ① to ⑤.

- ① 2025 is a multiple of 2.
- ② 2025 is a multiple of 3.
- ③ 5 is a divisor of 2025.
- ④ 25 is a divisor of 2025.
- ⑤ 2025 is a prime number.

(2) As shown in the figure below, the regular octagon ABCDEFGH has its vertices on a circle of radius 7 cm. What is the area of the shaded area? Assume that pi is 3.14.



4 (1) When three people are divided into two rooms, A and B, how many ways can they be divided so that there is at least one person in both room?

(2) When four people, two adults and two children, are divided into two rooms, A and B, how many ways can they be divided so that both rooms have one adult and one child?

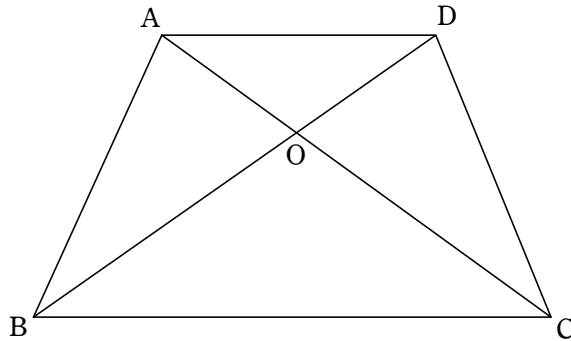
5 There is one bulb that, as soon as it is switched on, repeats the following state.

On for 3 seconds, off for 2 seconds, on for 3 seconds, off for 2 seconds

(1) How many seconds does the bulb stay on in the first 100 seconds after the switch is turned on?

(2) How many seconds after turning on the switch does the total time the bulb is on become 810 seconds?

- 6 Quadrilateral ABCD is a "trapezoid" with side AD 4 cm, side BC 7 cm, and sides AD and BC parallel. If the area of triangle ACD is 28 square centimeters, answer the following questions.



(2) What is the area of quadrilateral ABCD in square centimeters?

(1) What is the area of triangle OAD in square centimeters?

7 The decimals are arranged in a regular sequence as follows.

3.14, 12.56, 28.26, 50.24, 78.5, 113.04, 153.86, 200.96, ...

(1) What is the eleventh number from the left?

(2) What is the number 1256 from the left?

8 Explain why $\frac{2024}{2025}$ is a fraction that cannot be further simplified.