Sample Questions（サンプル問題）

Entrance Examination for the Bilingual Class

（西武学園文理中学校　バイリンガルクラス入試）

Mathematics and Science

（算数・理科）

Test Duration: 40 minutes（試験時間 40 分）

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注　意　事　項

Important Notes

Please read the following instructions carefully before the exam.

In the sample questions, the “Notes” section will be omitted.

サンプル問題では、「注意事項」は省略します。

Mathematics Questions

1. Calculate $\frac{7}{8} - \frac{2}{3}$.

   $\frac{5}{24}$

2. Calculate 2.5×1.7 .

   4.25

FOR QUESTIONS 3 – 5,
Please write down the calculations you have made and give your answers in complete sentences in English.

3. A lawnmower can mow 4 m^2 in 15 minutes. How many m^2 can the same lawnmower mow in $1\frac{1}{2}$ hours?

   $1\frac{1}{2}$ hour = 90 minutes $\quad 4 \times \frac{90}{15} = 4 \times 6 = 24$

   ANSWER: The lawnmower can mow 24 m^2 in $1\frac{1}{2}$ hours.

4. Adam ate $\frac{1}{6}$ of the cherries. Then, Mary ate $\frac{1}{6}$ of the remaining cherries. If Adam ate 12 cherries, how many cherries are remaining after Mary ate the cherries?

   $12 \times 6 = 72 \quad 72 - 12 = 60$

   $60 \times \frac{1}{6} = 10 \quad 60 - 10 = 50$

   ANSWER: There are 50 cherries remaining.

5. Plain Pizza Shop sells a 30-centimeter diameter pizza for 1000 yen. Square Pizza Shop, famous for its square shaped pizzas, sells a pizza that is 25 centimeters on each side for 800 yen. Which pizza shop has the better deal?

   $30 \div 2 = 15\ cm$

   $15 \times 15 \times 3.14 = 706.5\ cm^2 \quad 706.5 \div 1000 = 0.7065\ cm^2/yen$

   $25 \times 25 = 625\ cm^2 \quad 625 \div 800 = 0.78125\ cm^2/yen$

   $0.7065 < 0.78125$

   ANSWER: Square Pizza Shop has the better deal.

Science Questions

FOR QUESTIONS 1-3, READ THE FOLLOWING. CHOOSE THE BEST ANSWER.

Animals get their energy from the food they eat. The food an animal eats helps us classify them into three different groups: herbivores, carnivores, and omnivores.

Herbivores are animals that mostly eat plants. They may eat leaves, stems, fruits, or roots. Herbivores have special teeth and digestive systems that help them break down tough plant material.

Carnivores are animals that mostly eat other animals. They are predators that hunt and eat meat. These animals have sharp teeth, claws, or beaks that help them catch and tear their prey.

Omnivores eat both plants and other animals. Their bodies are made to digest both kinds of food.

1. ANSWER A, B, C, or D:
   What kind of animals mostly eat meat?
   A) herbivores
   B) carnivores – ANSWER
   C) omnivores
   D) decomposers

2. ANSWER A, B, C, or D:
   Which of the following animals are an example of a carnivore?
   A) pig
   B) mouse
   C) shark – ANSWER
   D) cow

3. ANSWER IN ENGLISH USING COMPLETE SENTENCES.
   Are most humans herbivores, carnivores, or omnivores? Why?
   ANSWER: Most humans are omnivores. This is because humans eat meat, vegetables, and fruit.

FOR QUESTIONS 4-5, READ THE FOLLOWING. CHOOSE THE BEST ANSWER.

There are two types of forces: contact and non-contact forces.

Contact forces happen when objects are touching each other. One example is friction, which happens when two objects slide against each other. Friction is why it is easier to walk on a sidewalk without ice than one with ice. Another example is an elastic force, which is when something wants to return to its original shape, like a spring or rubber band.

Non-contact forces happen when objects are not touching each other. One example is gravity, which pulls objects towards each other. On Earth, our weight is based on the force of gravity. Another example is magnetic force, which happens when an object is pushed towards or away from a magnet.

4. ANSWER A, B, C, or D:

What type of force is most likely to lift a metal object without touching it?

A) friction
B) elastic force
C) gravity
D) magnetic force – ANSWER

5. ANSWER IN ENGLISH USING COMPLETE SENTENCES.

How can friction help a bicycle move?

ANSWER: Friction allows the tires to hold onto the road, creating the necessary force to move and control the bicycle.