

B You are in a student group preparing a poster for a scientific presentation contest with the theme “What we should know in order to protect the environment.” You have been using the following passage to create the poster.

Recycling Plastic —What You Need to Know—

The world is full of various types of plastic. Look around, and you will see dozens of plastic items. Look closer and you will notice a recycling symbol on them. In Japan, you might have seen the first symbol in Figure 1 below, but the United States and Europe have a more detailed classification. These recycling symbols look like a triangle of chasing pointers, or sometimes a simple triangle with a number from one to seven inside. This system was started in 1988 by the Society of the Plastics Industry in the US, but since 2008 it has been administered by an international standards organization, ASTM (American Society for Testing and Materials) International. Recycling symbols provide important data about the chemical composition of plastic used and its recyclability. However, a plastic recycling symbol on an object does not always mean that the item can be recycled. It only shows what type of plastic it is made from and that it might be recyclable.

Figure 1. Plastic recycling symbols



So, what do these numbers mean? One group (numbers 2, 4, and 5) is considered to be safe for the human body, while the other group (numbers 1, 3, 6, and 7) could be problematic in certain circumstances. Let us look at the safer group first.

High-density Polyethylene is a recycle-type 2 plastic and is commonly called HDPE. It is non-toxic and can be used in the human body for heart

valves and artificial joints. It is strong and can be used at temperatures as low as -40°C and as high as 100°C . HDPE can be reused without any harm and is also suitable for beer-bottle cases, milk jugs, chairs, and toys. Type 2 products can be recycled several times. Type 4 products are made from Low-density Polyethylene (LDPE). They are safe to use and are flexible. LDPE is used for squeezable bottles, and bread wrapping. Currently, very little Type 4 plastic is recycled. Polypropylene (PP), a Type 5 material, is the second-most widely produced plastic in the world. It is light, non-stretching, and has a high resistance to impact, heat, and freezing. It is suitable for furniture, food containers, and polymer banknotes such as the Australian dollar. Only 3% of Type 5 is recycled.

Now let us look at the second group, Types 1, 3, 6, and 7. These are more challenging because of the chemicals they contain or the difficulty in recycling them. Recycle-type 1 plastic is commonly known as PETE (Polyethylene Terephthalate), and is used mainly in food and beverage containers. PETE containers — or PET as it is often written in Japan — should only be used once as they are difficult to clean thoroughly. Also, they should not be heated above 70°C as this can cause some containers to soften and change shape. Uncontaminated PETE is easy to recycle and can be made into new containers, clothes, or carpets, but if PETE is contaminated with Polyvinyl Chloride (PVC), it can make it unrecyclable. PVC, Type 3, is thought to be one of the least recyclable plastics known. It should only be disposed of by professionals and never set fire to at home or in the garden. Type 3 plastic is found in shower curtains, pipes, and flooring. Type 6, Polystyrene (PS) or Styrofoam as it is often called, is hard to recycle and catches fire easily. However, it is cheap to produce and lightweight. It is used for disposable drinking cups, instant noodle containers, and other food packaging. Type 7 plastics (acrylics, nylons, and polycarbonates) are difficult to recycle. Type 7 plastics are often used in the manufacture of vehicle parts such as seats, dashboards, and bumpers.

Currently, only about 20% of plastic is recycled, and approximately 55% ends up in a landfill. Therefore, knowledge about different types of plastic could help reduce waste and contribute to an increased awareness of the environment.





Your presentation poster draft:

Do you know the plastic recycling symbols?

What are plastic recycling symbols?

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Types of plastic and recycling information

Type	Symbol	Description	Products
1		This type of plastic is common and generally easy to recycle.	drink bottles, food containers, etc.
2		This type of plastic is easily recycled <input type="text" value="45"/> .	heart valves, artificial joints, chairs, toys, etc.
3		This type of plastic is <input type="text" value="46"/> .	shower curtains, pipes, flooring, etc.
4			

Plastics with common properties

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問 1 Under the first poster heading, your group wants to introduce the plastic recycling symbols as explained in the passage. Which of the following is the most appropriate?

- ① They are symbols that rank the recyclability of plastics and other related problems.
- ② They provide information on the chemical make-up and recycling options of the plastic.
- ③ They tell the user which standards organization gave them certificates for general use.
- ④ They were introduced by ASTM and developed by the Society of the Plastics Industry.

問 2 You have been asked to write descriptions of Type 2 and Type 3 plastics. Choose the best options for and .

Type 2

- ① and commonly known as a single-use plastic
- ② and used at a wide range of temperatures
- ③ but harmful to humans
- ④ but unsuitable for drink containers

Type 3

- ① difficult to recycle and should not be burned in the yard
- ② flammable; however, it is soft and cheap to produce
- ③ known to be a non-toxic product
- ④ well known for being easily recyclable

問 3 You are making statements about some plastics which share common properties. According to the article, which two of the following are appropriate? (The order does not matter.) ·

- ① Boiling water (100°C) can be served in Type 1 and Type 6 plastic containers.
- ② It is easy to recycle products with Type 1, 2, and 3 logos.
- ③ Products with the symbols 1, 2, 4, 5, and 6 are suitable for food or drink containers.
- ④ Products with Type 5 and Type 6 markings are light in weight.
- ⑤ Type 4 and 5 plastics are heat resistant and are widely recycled.
- ⑥ Type 6 and 7 plastics are easy to recycle and environmentally friendly.

英語(リーディング) (100点満点)

問題番号 (配点)	設問	解答番号	正解	配点	問題番号 (配点)	設問	解答番号	正解	配点		
第1問 (10)	A	1	1	1	第4問 (16)	1	24	3	3		
		2	2	3		2	2	25	3	3	
	B	1	3	2		2	3	26	2	3	
		2	4	2		2	4	27	1	3	
		3	5	1		2	5	28	2	2	
				29	4	2					
第2問 (20)	A	1	6	5	第5問 (15)	1	30	1	3		
		2	7	3		2	2	31-32	4-5	3*	
		3	8	1		2	3	33	2	3*	
		4	9	3		2		34	5		
		5	10	1		2		35	4		
					36	1					
	B	1	11	2	2	4	37	3	3		
		2	12	4	2	5	38	3	3		
		3	13	2	2	第6問 (24)	A	1	39	3	3
		4	14	4	2			2	40	3	3
5		15	2	2	3			41	1	3	
				4	42			6	3*		
					43		3				
第3問 (15)	A	1	16	1	3	B	1	44	2	3	
		2	17	1	3		2	45	2	3	
	B	1	18	1	3*		2	46	1	3	
			19	4		3					
			20	3							
	21	2		3							
	2	22	2	3	3	47-48	3-4	3*			
3	23	2	3								

(注)

- 1 *は、全部正解の場合のみ点を与える。
- 2 -(ハイフン)でつながれた正解は、順序を問わない。