

**Intermediate Science 8**  
STSE- Cleaning Fluids: Soaps and Detergents



Student Name: \_\_\_\_\_

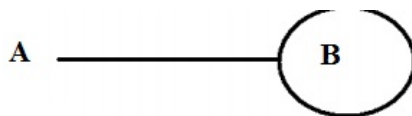
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**PART A: MULTIPLE CHOICE:** Place the correct answer in the space provided on the answer sheet.

1. What is a surfactant?
  - (A) A material that can greatly reduce the surface tension of water
  - (B) A material that can greatly increase the surface tension of water
  - (C) It is a smooth surface
  - (D) It is a rough surface
  
2. Which of the following is an example of a surfactant?
  - (A) Dirt
  - (B) Grease
  - (C) Soap
  - (D) Water
  
3. Which of the following is true for surface tension?
  - (I) Force of nature caused by the attractive forces within a liquid
  - (II) It causes molecules to tighten or form a slight barrier at the surface.
  - (III) Soap can be used to reduce surface tension
  - (A) I and II
  - (B) II and III
  - (C) I and III
  - (D) I, II and III
  
4. How many ends does a soap molecule have?
  - (A) 2
  - (B) 8
  - (C) 6
  - (D) 18
  
5. Which of the following has the terms labelled correctly?

	<b>hydrophobic</b>	<b>hydrophilic</b>
(A)	water soluble	water soluble
(B)	water soluble	water insoluble
(C)	water insoluble	water insoluble
(D)	water insoluble	water soluble

6. According to the STSE, what does the A and B represent in the diagram below?



	<b>A</b>	<b>B</b>
(A)	hydrophobic	hydrophobic
(B)	hydrophobic	hydrophilic
(C)	hydrophilic	hydrophilic
(D)	hydrophilic	hydrophobic

7. Which of the following is true?

- (A) The hydrophobic end dissolves into the grease, and surrounds it to prevent the stains from move somewhere else
- (B) The hydrophobic end dissolves into the water, and washes away the stain
- (C) The hydrophilic end dissolves into the grease, and surrounds it to prevent the stains from move somewhere else
- (D) All are correct

8. How does a grease stain break away from the surface?

- (A) Movement of water in the washing machine
- (B) Let the stain soak
- (C) Use cold water
- (D) Use hot water

9. What is the basic ingredient of all soap?

- (A) Hydrophobic end
- (B) Hydrophilic end
- (C) Dual ended molecule.
- (D) Tri ended molecule

10. Which of the following is true for detergents?

- (I) Also known as synthetic detergents
  - (II) After World War II, the demand for detergents decreased dramatically
  - (III) Were developed because of a shortage of fats (animal and vegetable),
- (A) I and II
  - (B) II and III
  - (C) I and III
  - (D) I, II and III

**MATCHING : PART B**

Instruction: Match each Term on the left with the best Descriptor on the right. Each Descriptor may be used only once. Place your answers on the scantron

TERM	DESCRIPTOR
11. ____ Builders	(A) Organic compounds that attack or breakdown proteins. These compounds would clean grass and blood stains by destroying the proteins found in them.
12. ____ Anti-redeposition Agents:	(B) This chemical gave the fabric a small negative charge, which repelled the negatively charged dirt. It prevented the stain from “re-sticking” to the clothes.
13. ____ Optical Brighteners	(C) These were used to make white clothing “whiter”. It absorbs ultra-violet light and then give it off as a visible light. This process is called fluorescence.
14. ____ Anti-corrosion Agents	(D) These chemicals were added so that metal objects like buttons and zippers would not rust or corrode.
15. ____ Enzymes	(E) It was used to removed extra magnesium and calcium ions from the water. With these ions removed from the water, no “scum” (or “ring-around-the tub”) will form and stick to the clothes.

**PART C: WRITTEN RESPONSE**

1. List a change the detergent industry has made for each of the following environmental and health concerns:

(A) Phosphate Pollution:

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(B) Sewage Treatment:

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(C) Landfill:

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(D) Perfume Allergies:

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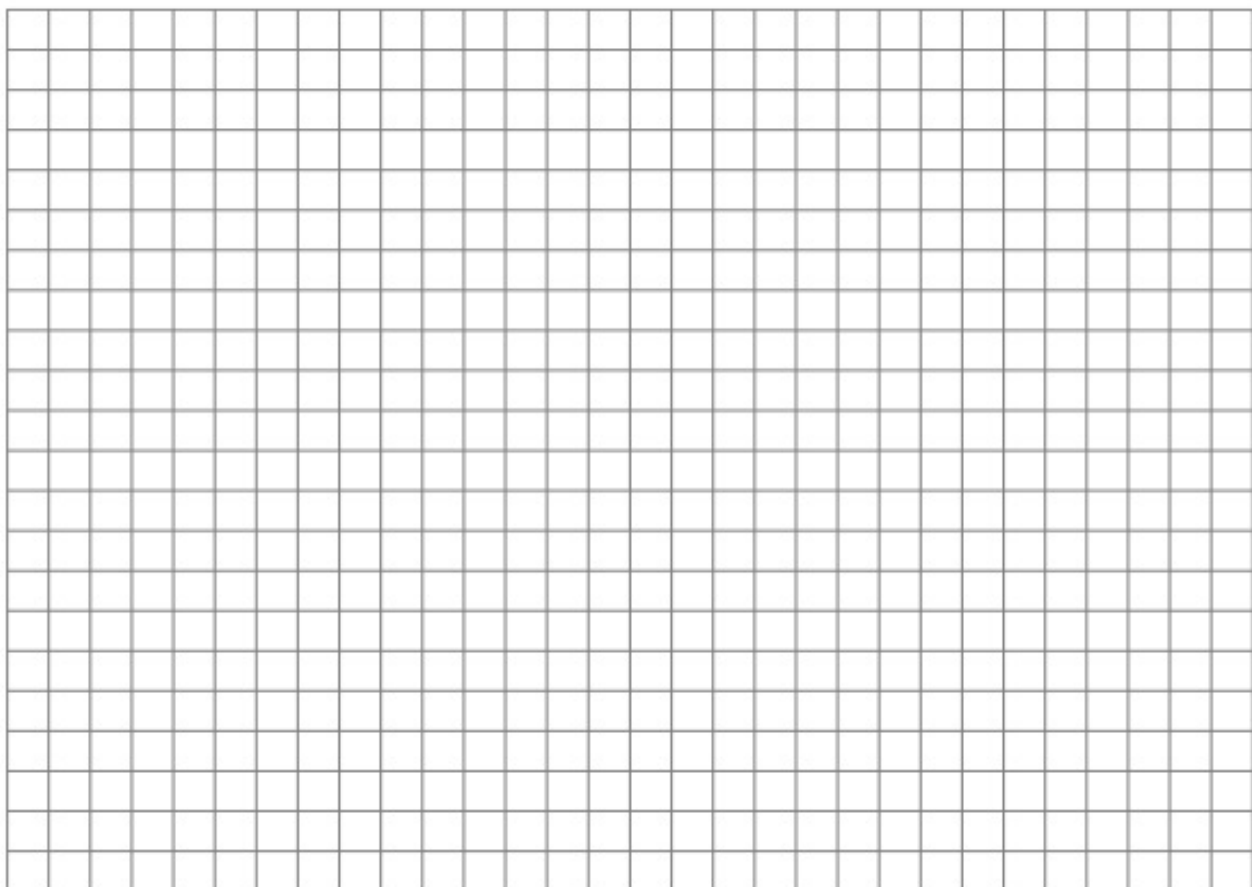
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**PART D:**

Instruction: Graph the data in the table entitled, “Sales of Soaps and Detergents”.  
Predict the data for the sales of soaps and detergents today

**Sales of Soaps and Detergents**

Year	Soaps (X 1000 tones)	Detergents (X 1000 tons)
1940	1410	4.5
1950	1340	655
1960	583	1645
1970	587	4448



1. When did detergents become more popular than soaps?
2. Why do you think people started using more detergents?
3. Use the data to predict the sales of soaps and detergents for today

