# Packing Materials
## Task Information

**Grade:** 4th Grade

**Content:** IC1.11 - Object properties, different materials/properties
IC1.12 - Change size and shape
IIIE1.3 - Ecosystem: material utilization, waste

**Format:** Manipulative

**Purpose:**

The Students will test the solubility of different items used in packing. Based on their observations, the students will explain which of the materials would be least harmful to the environment.

**Skills:**

**Primary:** Observing
**Secondary:** Generalizing

**Time:** 10 - 15 minutes

**Materials:**

**Teacher:**
- water waste bucket
- jug of warm water

**Per Student:**
- 4 - clear cups with warm water (at least 7 oz.)
- 4 stirring sticks (coffee stir sticks)
- waste cup
- 1 biodegradable (starch) packing pellet
- 1 piece of freshly popped popcorn
- 1 piece of newspaper (5 cm square)
- 1 Styrofoam packing peanut
- hand lens
- paper towels

**Preparation:**
- Cut newspaper into 5 cm square pieces.
- Label cups A, B, C, & D for each student station.
- Put warm tap water into each of the cups at the stations just prior to student testing.
- Keep a jug of warm water handy to replenish cups C and D at each of the student stations after each student test.
- Put cupful of each of the test items at each of the student stations. The children will then have access to the supplies and the teacher will not have to replenish after each student finishes.
- After each student, cups C and D will need to be thrown out and replaced by the teacher.
- Starch packing pellets can be obtained from a science supply company or mailing (UPS) center.
- Popcorn should be freshly popped (within 24 hours).

**Safety:** Instruct the students not to eat any of the materials.

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# Packing Materials

**Task**: At this station, you will observe the effect of water on four different packing materials.

## Materials:

- 4 cups containing water labeled A - D
- a stirring stick
- waste cup
- paper towels
- hand lens
- packing peanuts
- squares of newspaper
- packing pellets
- pieces of popcorn

## Directions:

1. Observe each of the four packing materials. Try using the hand lens.
2. Place **one** packing peanut in cup A. Stir the water and observe what happens. Record your observations on your answer sheet in #1A.
3. Place **one** piece of newspaper in cup B. Stir the water and observe what happens. Record your observations on your answer sheet in #1B.
4. Place **one** packing pellet in cup C. Stir the water and observe what happens. Record your observations on your answer sheet in #1C.
5. Place **one** piece of popcorn in cup D. Stir the water and observe what happens. Record your observations on your answer sheet in #1D.
6. Answer question 2A, 2B, and 3 on your answer sheet.
7. Take the packing peanut and the newspaper out of cups A and B. Throw them in the waste cup.

   Your teacher will come around and replace cups C and D.

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# Answer Sheet
# Packing Materials

1. Describe some things that happened to each of the objects (other than getting wet) when you placed them in water.

A. Packing Peanut _____

_____

_____

B. Newspaper _____

_____

_____

C. Packing Pellet _____

_____

_____

D. Popcorn _____

_____

_____

2A. Which of the items that you tested would you use as a packing material?

_____

2B. In the space below, explain the reason for your choice.

_____

_____

_____

_____

3. Explain why the material you chose may or may not be a good choice for the environment.

_____

_____

_____

_____

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# Packing Materials - Scoring Rubric

**Maximum score - 6 points**

## 1. Observations of packing materials in water — 4 points total

**Standard:** The student will describe what happened to each object when it was placed in water.

**Criteria:**

- 1 point for each appropriate description

Packing peanut:

- stayed the same shape, size, color, etc.
- did not change, nothing happened
- floated, stayed on the top of the water
- did not dissolve

newspaper:

- got soggy, soaked up/absorbed water
- tore apart
- did not float, sunk
- stuck to the cup

Packing pellet:

- dissolved, melted, broke up, disappeared, etc.
- it cannot be taken out in the same form it was put in
- shriveled (shrunk) up
- floated at first
- made the water frothy or bubbly
- shriveled or shrunk up

Popcorn:

- floated, stayed on the top of the water
- got soggy, soft, mushy
- broke into pieces, got smaller
- did not dissolve

## 2A. Name the best packing material — No credit

**Standard:** The student chooses what he/she feels is the best packing material.

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## 2B. Explanation of choice for packing — 1 point total

**Standard:** The student explains why he/she has chosen the item as a packing material.

**Criteria:**

- 1 point is given for a valid explanation of the student's choice.

  Sample of acceptable explanations:

  - it would protect the object
  - it is soft and would wrap around the object
  - it could fit into nooks and crannies and little spots
  - it doesn't break up into pieces
  - it would stay together even if it got wet

## 3. Environmental implications of packing material's use — 1 point total

**Standard:** The student states a problem or benefit of using the material named in question 2A.

**Criteria:**

- 1 point for an appropriate explanation of problem or benefit
  **The student's explanation must be about the material stated in question 2A. It cannot be about another material.**

  Sample of appropriate responses:

  - it is or is not biodegradable
  - it does or doesn't break down easily
  - it takes too long to break down
  - it takes up too much space
  - it can or can't be reused/recycled
  - it is harmful to animals
  - Animals can eat it
  - it doesn't take up space in a landfill

**Total possible score - 6 points**

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**Student ID** _____ **Scoring Form - Packing Materials**

**male / female (circle one)**

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

| | | | |
|---|---|---|---|
| 1. | Observations of packing materials in water | | |
| | Packing peanut | 0 | 1 |
| | Newspaper | 0 | 1 |
| | Packing pellet | 0 | 1 |
| | Popcorn | 0 | 1 |
| 2A. | Name the best packing material | NR | |
| 2B. | Explanation of choice for packing | 0 | 1 |
| 3. | Environmental implications of packing material's use | 0 | 1 |

**Total Score** _____

Total possible score - 6 points

**Student ID** _____ **Scoring Form - Packing Materials**

**male / female (circle one)**

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

| | | | |
|---|---|---|---|
| 1. | Observations of packing materials in water | | |
| | Packing peanut | 0 | 1 |
| | Newspaper | 0 | 1 |
| | Packing pellet | 0 | 1 |
| | Popcorn | 0 | 1 |
| 2A. | Name the best packing material | NR | |
| 2B. | Explanation of choice for packing | 0 | 1 |
| 3. | Environmental implications of packing material's use | 0 | 1 |

**Total Score** _____

Total possible score - 6 points

Student ID 5RJ-10 #1 Scoring Form - Packing Materials

(male) / female (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

| | | | |
|---|---|---|---|
| 1. | Observations of packing materials in water | | |
| | Packing peanut | 0 | (1) |
| | Newspaper | 0 | (1) |
| | Packing pellet | (0) | 1 |
| | Popcorn | (0) | 1 |
| 2A. | Name the best packing material | NR | |
| 2B. | Explanation of choice for packing | (0) | 1 |
| 3. | Environmental implications of packing material's use | (0) | 1 |

**Total Score** 2

Total possible score - 6 points

**Student ID** 5RJ-1 #2 **Scoring Form - Packing Materials**

**male / (female) (circle one)**

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

| | | | |
|---|---|---|---|
| 1. | Observations of packing materials in water | | |
| | Packing peanut | 0 | (1) |
| | Newspaper | 0 | (1) |
| | Packing pellet | 0 | (1) |
| | Popcorn | 0 | (1) |
| 2A. | Name the best packing material | NR | |
| 2B. | Explanation of choice for packing | (0) | 1 |
| 3. | Environmental implications of packing material's use | (0) | 1 |

**Total Score** 4

Total possible score - 6 points

male / (female) (circle one)

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

| | | | |
|---|---|---|---|
| 1. | Observations of packing materials in water | | |
| | Packing peanut | 0 | (1) |
| | Newspaper | 0 | (1) |
| | Packing pellet | 0 | (1) |
| | Popcorn | 0 | (1) |
| 2A. | Name the best packing material | NR | |
| 2B. | Explanation of choice for packing | 0 | (1) |
| 3. | Environmental implications of packing material's use | (0) | 1 |

**Total Score** 6
Total possible score - 6 points

**Student ID** _____ **Scoring Form - Packing Materials**
**male / female (circle one)**

Circle the student's score for each question. Add the points for each question and write the total score at the bottom of the scoring form.

| | | | |
|---|---|---|---|
| 1. | Observations of packing materials in water | | |
| | Packing peanut | 0 | 1 |
| | Newspaper | 0 | 1 |
| | Packing pellet | 0 | 1 |
| | Popcorn | 0 | 1 |
| 2A. | Name the best packing material | NR | |
| 2B. | Explanation of choice for packing | 0 | 1 |
| 3. | Environmental implications of packing material's use | 0 | 1 |

**Total Score** _____
Total possible score - 6 points

5RJ-10

#1

## ANSWER SHEET
## Packing Materials

1. Describe some things that happened to each of the objects (other than getting wet) when you placed them in water.

A. Packing Peanut ~~A~~ nothig happened,

B. Newspaper It got wet,

C. Packing Pellet It got soft.

D. Popcorn notthing happened

2A. Which of the items that you tested would you use as a packing material?

paper

2B. In the space below, explain the reason for your choice.

is sick to the buttum

3. Explain why the material you chose may or may not be a good choice for the environment.

in suck to the bottom of the cup

5RJ-1

#2

# ANSWER SHEET
## Packing Materials

1. Describe some things that happened to each of the objects (other than getting wet) when you placed them in water.

A. Packing Peanut It just floated and got little drops on it.

B. Newspaper It just sank and it got soked.

C. Packing Pellet It floated and it got soked.

D. Popcorn It floted bc it broke oparti.

2A. Which of the items that you tested would you use as a packing material?

Packing Peanuts

2B. In the space below, explain the reason for your choice.

because it didn't get all wet so if it rained it wont get wet

3. Explain why the material you chose may or may not be a good choice for the environment.

The paper can get all wet. The Packing Pellets can get all wet. the popcorn can get all broken up.

5RJ-16

#3

**ANSWER SHEET**
**Packing Materials**

1. Describe some things that happened to each of the objects (other than getting wet) when you placed them in water.

A. Packing Peanut It didint do anything.

B. Newspaper when it got it stuck to the bottem.

C. Packing Pellet it desolved in to little peaces in the water.

D. Popcorn it got soft and soggy.

2A. Which of the items that you tested would you use as a packing material?

A.

2B. In the space below, explain the reason for your choice.

Because it didint got soggy or stick to the bottem or it didint desolve. It just stayed the same as befor I put it in the water.

3. Explain why the material you chose may or may not be a good choice for the environment.

Becaus it wont make a big mess.