Penguin Ice Cream Parlor

Objective

Students use math skills and formulas to convert metric quantities to English equivalents. They practice measuring ingredients to prepare a simulated animal formula.

Materials

per student group:

- ❑ kitchen scale
- ❑ kitchen blender
- ❑ kitchen measuring cups and spoons
- ❑ **Penguin Ice Cream Parlor** funsheet
- ❑ milkshake ingredients in amount given in ANSWERS box below, plus 1 tsp. chocolate syrup.

Background

Both male and female penguins feed their young by regurgitating partially digested fish and krill. In zoological parks like SeaWorld, bird experts feed hand-raised penguin chicks a formula that imitates their natural diet.

Action

1. Divide class into student groups. Distribute a **Penguin Ice Cream Parlor** funsheet to each group. As a class, read "Penguin Chick Formula" recipe. Discuss ingredients. How does the formula imitate regurgitated fish and krill fed by adults?
2. Have groups read "Student Formula (No Fish!)" recipe and complete the ingredient conversions.
3. Students are now ready to create their recipes. Display formula ingredients on a classroom table and have a student from each group measure milkshake ingredients.
4. As a class, check conversion values and discuss calculation differences. Why is precise measuring important in preparing animal formulas?

Deeper Depths

Have students research and compare nutritional needs of dogs and cats by reading pet food labels. Is there a difference? Why? Students design their own specialty pet food.

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Answers

Use your math skills to convert the "Penguin Chick Formula" recipe to one you will enjoy. Use the worksheet below and the equivalent values listed under the "Penguin Chick Formula" box. When finished, use the ingredients in the amounts you calculated to blend your "Student Formula." Round up answers when necessary.

1. 220 grams herring
   220 g x **0.035** = **7.7** ounces peeled bananas
2. 220 grams krill
   220 g x **0.035** = **7.7** ounces ice cream
3. 0.420 liters water
   0.420 x **4.226** = **1.8** cups milk
4. 4 Brewer's yeast tablets substitute
   4 malted milk balls
5. 0.275 grams vitamin B1
   0.275 g x **0.035** = **0,01** ounces cocoa powder
6. 1 sea bird multivitamin substitute
   1 jellybean
7. 2 calcium carbonate tablets substitute
   2 chocolate chips
8. 600 I.U. Vitamin E substitute
   1 teaspoon chocolate syrup
9. 1 milliliter multivitamin
   1 ml x **0.204** = **0.2** teaspoons vanilla extract

Collect your ingredients in the amounts you calculated. Use a blender to combine ingredients. How does your formula taste? Does it taste the same or different than formulas created by other student groups?

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Student names _____

_____

_____

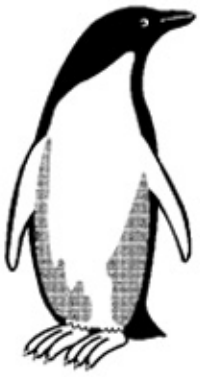
Penguin Chick Formula Recipe

Blend ingredients thoroughly. Strain through large colander and discard large particles. Mark container with date and time. Refrigerate. Use within 24 hours.

To feed chicks, warm formula in a double-boiler pot to 32.2°C (90°F). Fill feeding syringe with formula. Solicit feeding response in a chick by placing two fingers (forming a "V") over the chick's bill. Gently position feeding syringe over the chick's mouth and slowly give formula. Make sure that the chick continues to swallow the formula as you deliver it. Note the penguin chick's weight both before and after feeding, and the amount of food given.

INGREDIENTS

- 220 grams whole herring (with head, tail, fins, and skin removed before weighing)
- 220 grams krill (squeeze off excess water)
- 0.420 liters bottled drinking water
- four Brewer's yeast tablets
- 0.275 grams vitamin B1 (thiamine)
- one seabird multivitamin
- two calcium carbonate tablets
- 600 I.U. (International Units) Vitamin E
- 1 milliliter liquid multivitamin (pediatric) drops with iron



Converting metric units to English units

to convert	*into*	*multiply by:*
grams (g)	ounces (oz.)	0.035
liters (l)	cups (c)	4.226
milliliters (ml)	teaspoons (tsp.)	0.204

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STUDENT FORMULA (NO FISH!)

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   220 g x _____ = _____ ounces peeled bananas
2. 220 grams krill
   220 g x _____ = _____ ounces ice cream
3. 0.420 liters water
   0.420 l x _____ = _____ cups milk
4. 4 Brewer's yeast tablets
   substitute _____ malted milk balls
5. 0.275 grams vitamin B1
   0.275 g x _____ = _____ ounces cocoa powder
6. 1 sea bird multivitamin
   substitute _____ jellybean
7. 2 calcium carbonate tablets
   substitute _____ chocolate chips
8. 600 I.U. Vitamin E
   substitute *1* teaspoon chocolate syrup
9. 1 milliliter multivitamin
   1 ml x _____ = _____ teaspoons vanilla extract

Collect your ingredients in the amounts you calculated. Use a blender to combine ingredients. How does your formula taste? Does it taste the same or different than formulas created by other student groups?