

MATHS MISSION

Fishing Quota Challenge

 YOUR ROLE: FISHERIES RANGER Your Mission

As a Fisheries Ranger, you've been asked to monitor barramundi numbers in a local waterway and recommend a catch limit that will be shared fairly between family groups — one that leaves enough fish to breed for next season.

 Before You Begin

- Why might a community choose to take only a small share of the fish available, rather than as many as possible?
- What could happen to future seasons if too many fish are taken this season?

 *Talk with a partner: have you or your family been fishing for barramundi before?*

 Background

Many communities manage fishing seasonally so that enough fish remain to breed for next year. A sustainable catch is usually a small percentage of the total population — not 'as many as possible'.

 Step 1 – Estimating the Sustainable Catch

This season's barramundi population is estimated at 800.

A sustainable catch is recommended at 10% of the population.

- Sustainable catch = 10% of 800 = ____

 Step 2 – Sharing the Quota Equally

There are 4 family groups sharing the quota this season.

Divide the sustainable catch equally between the 4 groups.

- Each group's equal share = ____ ÷ 4 = ____

 *Check your working with a partner.*

 Step 3 – What If the Population Changes?

Dry conditions mean next season's population is only estimated at 650.

Recalculate the sustainable catch and each group's equal share for next season.

Season	Population	10% Catch	Each Group's Share
This season	800	_____	_____
Next season	650	_____	_____

 Make a Decision

Should the catch limit percentage stay at 10% if fish numbers are dropping, or should it change?

- ☐ Keep it at 10%
- ☐ Lower the percentage
- ☐ Raise the percentage

Explain your decision using your numbers from Step 3.

: _____
: _____

⚠️ Mission Challenge

One of the four groups is much larger (12 people) than the other three (4 people each).

Should the quota still be split equally, or based on group size? Try sharing this season's sustainable catch using the ratio of group sizes instead.

Group	People	Share (by size)
Group A	12	_____
Group B	4	_____
Group C	4	_____
Group D	4	_____

Compare the size-based shares to the equal shares from Step 2. Which do you think is fairer, and why?

: _____

★ Extension Challenge

Write a rule connecting the population size to the sustainable catch, for any percentage.

What happens to the sustainable catch if the population doubles?

: _____

What happens to the sustainable catch if the percentage doubles?

: _____

What is your rule?

 *Talk with a partner before you write your rule.*

My idea: _____

Community Connection

Many communities have their own rules or practices around fishing sustainably.

- Seasonal fishing closures
- Size or number limits
- Sharing agreements between families
- Rules about who can take what, and when

What rules or practices does your community use around fishing?

: _____

Reflection

Circle how you felt about today's mission:

 Confident  Mostly understood  Needed some help  Found it difficult

Which felt fairer to you — the equal split or the size-based split? Why?

: _____

Bonus Challenge

Write one sentence explaining to a visitor why the quota isn't just 'first in, best dressed'.

: _____

: _____