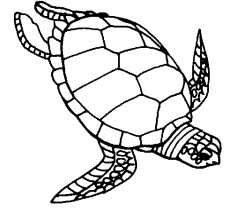




# Fishy Business

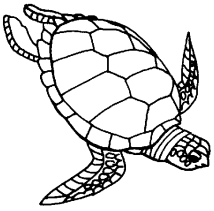


**Your task : to design and make a model aquarium**

**You will :**

- **Use maths to work out how much it will cost.**
- **Find out about exotic water creatures and the places they live in.**
- **Use craft skills to build a model**





## Planning your aquarium

### The Budget

You have £200,000 to spend on living things for your aquarium.

The prices of the animals and plants are found on the information card.

### Choosing your habitats

The creatures available are sorted into four groups depending on the conditions they need to live.

Each tank you make can only contain creatures from one group.

### Planning your tanks

You may wish to choose to build three or four tanks with a few creatures in each.

Or, you could build one or two tanks, with lots of creatures.

### Buying your exhibits

Once you have decided on your tanks, you need to decide what to put in it.

Use the shopping sheet to record the creatures you want.

### Going further

Do you think the creatures you are thinking of choosing will survive together?

What could you do to make sure none of them die out?





# Building your Aquarium

## Making your tanks

1

Use your “Shopping for your Aquarium” sheet to find out how many tanks you need.

Use the materials provided to make your tanks.

Make the tanks big enough for all your creatures!

Think of a way to hang your exhibits in the tanks.

## Making your exhibits

2

Use your “Shopping for your Aquarium” sheet as a list of what you need to make.

Use the materials to make each of your creatures.

Some could be suspended from the top of the tank to make them swim.

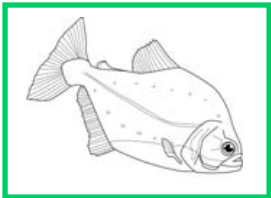
## Adding scenery and decorations

3

Think about other things you may need in the tanks.

What about rocks or plants?

What type of scenery would your creatures live with in the wild?



# Shopping for your Aquarium

**Budget = £200,000**

- List the items you want in each tank.
- Record the prices and add up the total.
- You may not need to use all boxes if you have less than four tanks.

Item	Qty	Cost
Cost of tank		

Item	Qty	Cost
Cost of tank		

Item	Qty	Cost
Cost of tank		

Item	Qty	Cost
Cost of tank		

**Total cost =**

# Information Cards – Cold Freshwater



## Pike



Price: £10,000 for 5

Eats: Fish, ducks and frogs

Facts: Can grow to almost 2m long.  
A cannibal – will eat other pikes.  
Can be a danger to divers.

## Perch



Price: £10,000 for 10

Eats: Small fish and Invertebrates

Facts: Markings help to camouflage against  
Reeds.  
Hunt in groups.

## Freshwater Crayfish



Price: £10,000 for 15

Eats: Snails, insects and small fish

Facts: Highly endangered in Britain.  
Introduced American crayfish spread  
disease amongst the native animals.

## Diatoms



Price: £500 per tank

Eats: Use sunlight for photosynthesis

Facts: Tiny microscopic plants.  
Have beautiful silicon shells.  
Some of the most common plants in  
the world.

# Information Cards – Cold Freshwater



## Sockeye Salmon



Price: £10,000 for 10

Eats: plankton and small invertebrates

Facts: Travel around the sea but always return to rivers to mate and lay eggs.

## Wood Frog



Price: £10,000 for 5

Eats: Insects and other invertebrates

Facts: Able to survive in very cold conditions.

Has a chemical in its blood that acts as anti-freeze.

## Stickleback



Price: £1,000 for 10

Eats: Small invertebrates

Facts: Make nests to protect eggs from predators.

Females mate with males with the brightest red colouring.

## Caddisfly Larvae



Price: £1,000 for 100

Eats: Tiny invertebrates

Facts: Live underwater for 3 years.

Live as an adult for two days.

Make a protective shell out of anything they can find.



# Information Cards – Cold Freshwater



## Water Scorpion



Price: £10,000 for 50

Eats: insects, small fish and tadpoles

Facts: From the same group of insects as Greenfly.

Uses sharp front legs to spear prey.

Uses its tail like a snorkel.

## Water Boatman



Price: £1,000 for 100

Eats: Algae

Facts: Uses hairs on its legs like oars.

The only water bug that can't bite.

## Great Crested Newt



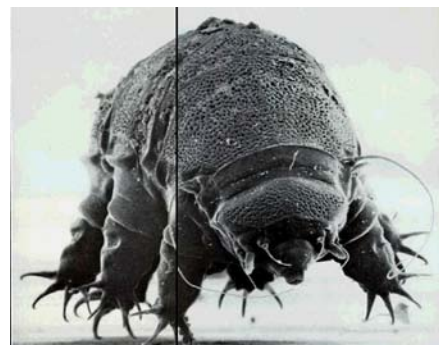
Price: £5,000 for 10

Eats: Small invertebrates, fish and tadpoles

Facts: Only males have crests.

Endangered in Britain due to draining of ponds.

## Water Bear



Price: £500 per tank

Eats: Algae and tiny worms

Facts: Microscopic animals.

Not related to any other invertebrate group.

Can survive for several years without water.

# Information Cards – Cold Sea



## Great White Shark



Price: £40,000 each

Eats: Large fish, squid, turtles and seals

Facts: Can grow to over 6m long.  
2nd largest fish in the sea.  
Ambush prey from below at very high speed.

## Barracuda

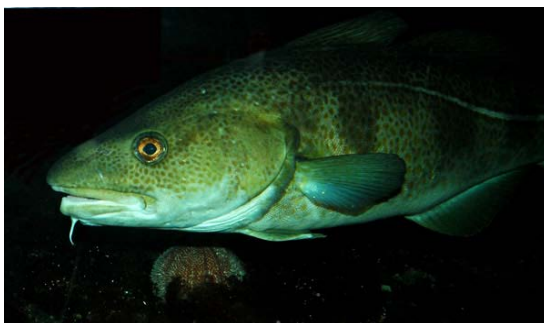


Price: £20,000 for 5

Eats: Small fish

Facts: Can swim at up to 30mph.  
Grow to almost 2m long.  
Follow other large predators for scraps of food.

## Cod



Price: £10,000 for 8

Eats: Plankton and small invertebrates

Facts: Threatened by over-fishing.  
Can change colour depending on the depth of water.

## Octopus



Price: £10,000 for 2

Eats: Crabs, shrimp, molluscs and small fish

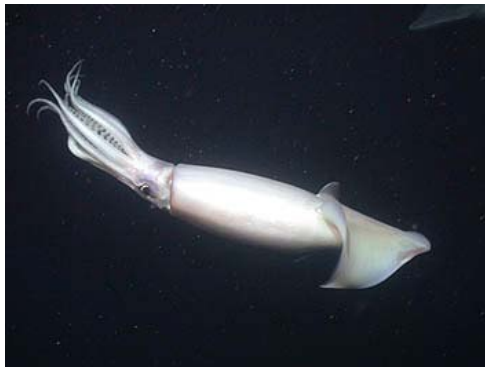
Facts: Changes colour to display moods.  
Are completely soft apart from beak.  
Very intelligent - Able to solve complex problems.



# Information Cards – Cold Sea



## Humboldt Squid



Price: £10,000 for 5

Eats: Small fish and invertebrates

Facts: Group together in huge shoals.  
Swim by squirting water like a jet.  
Squirt clouds of ink to confuse predators.

## Anchovy

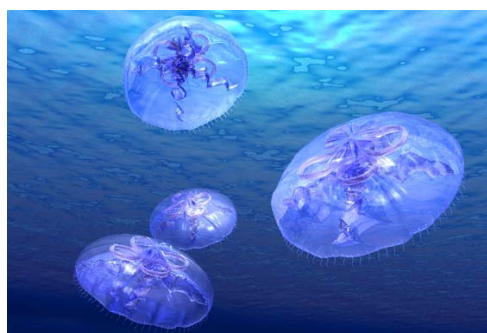


Price: £1,000 for 100

Eats: Plankton

Facts: Swim in huge ball shaped shoals.  
Prey of many larger fish.

## Moon Jellyfish



Price: £1,000 for 10

Eats: Plankton and small invertebrates

Facts: Sting prey with tentacles  
Turn their stomachs inside out to digest food

## Krill



Price: £500 per tank

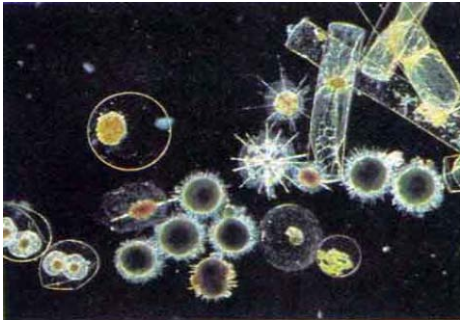
Eats: Plankton and algae

Facts: Tiny shrimp-like crustaceans.  
Food for many animals including whales.

# Information Cards – Cold Sea



## Plankton



Price: £500 per tank

Eats: Tiny pieces of dead matter or use sunlight for photosynthesis.

Facts: Made up of tiny animals and plants.  
Includes baby sea creatures and larvae.  
Plant plankton are the commonest plants on Earth.

## Scallop



Price: £5,000 for 15

Eats: Plankton

Facts: From the same group of animals as snails.  
Are able to swim by quickly opening and closing.

## European Lobster



Price: £1,000 for 5

Eats: Starfish, crabs and other invertebrates

Facts: Young spend three weeks as plankton.  
Migrate huge distances across the seabed.

## Flounder

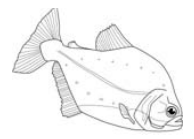


Price: £1,000 for 10

Eats: Small invertebrates and plankton

Facts: Both eyes are on one side of their head.  
Found in the deepest parts of the ocean, as well as the shallowest.

# Information Cards – Tropical Freshwater



## Piranha



Price: £10,000 for 2

Eats: Small fish, seeds, injured and dead animals

Facts: Grow to about 30cm.  
Only form schools for protection.  
Extremely sharp teeth are used by people to make tools like saws.

## Archer Fish



Price: £1,000 for 10

Eats: Insects

Facts: Squirts jets of water to knock food into the water.  
Can see equally well in water and air.

## Arowana



Price: £10,000 each

Eats: Insects and other small invertebrates

Facts: Can grow to over 1m long.  
Leaps out of water to catch insects on branches and leaves.

## Elephantnose fish



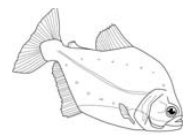
Price: £1,000 for 10

Eats: Tiny insects and invertebrates

Facts: Uses sensitive nose to detect food.  
Produces electrical signals to sense surroundings in murky water.



# Information Cards – Tropical Freshwater



## Guppy



Price: £1,000 for 10

Eats: Plankton and algae

Facts: Males are highly decorated to attract females.

Each river has differently decorated males.

## Electric Eel



Price: £20,000 each

Eats: Small fish and mammals

Facts: Uses electrical signals to detect prey.  
Uses powerful electric shocks to stun prey or predators.

## Giant Catfish



Price: £40,000 each

Eats: Weeds and algae

Facts: Can grow up to 3m long.  
The second largest freshwater fish in the world.  
Endangered because of angling.

## Siamese Fighting Fish

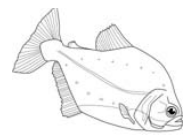


Price: £1,000 for 10

Eats: Tiny insects and invertebrates

Facts: Males fight over females and must be kept separate in tanks.  
Males also make nests of bubbles to protect eggs.

# Information Cards – Tropical Freshwater



## Softshell Turtle



Price: £10000 for 2

Eats: Fish, crayfish and worms

Facts: Uses long nose like a snorkel.  
Able to absorb some oxygen from water through its skin.

## African Clawed Frog



Price: £5000 for 5

Eats: Small fish and insects

Facts: Pushes its eyes into its mouth to squash food.  
Eats its own skin when it moults.

## Lake Malawi Cichlid



Price: £500 for 10

Eats: Weeds and algae

Facts: There are over 300 species of cichlid that are only found in Lake Malawi.

## Diatoms



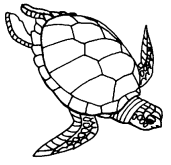
Price: £500 per tank

Eats: Use sunlight for photosynthesis

Facts: Tiny microscopic plants.  
Have beautiful silicon shells.  
Some of the most common plants in the world.



# Information Cards – Tropical Sea



## Tiger Shark



Price: £40,000 for 2

Eats: Large fish, birds, squid and turtles

Facts: Can grow to over 5m long.  
Gets its name from striped markings on its back.  
Very dangerous.

## Lemon Shark



Price: £10,000 for 2

Eats: Fish and crustaceans

Facts: Lives on coral reefs, in bays and harbours.  
Only travels into open sea to breed

## Clownfish



Price: £1000 for 10

Eats: Plankton and small invertebrates

Facts: Lives alongside anemones, which protect them by stinging predators.  
Helps anemones by eating parasites.

## Stingray

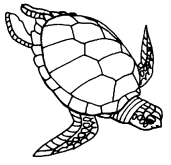


Price: £5000 for 2

Eats: Crabs, shrimp and small fish

Facts: Hides in the sand to avoid predators.  
Has a poisonous spur under their tail.

# Information Cards – Tropical Sea



## Sea Anemone



Price: £1000 for 10

Eats: Plankton and small invertebrates

Facts: Stings predators with tentacles.  
Fights for space by dissolving their neighbours

## Parrot Fish



Price: £10,000 for 5

Eats: coral and seaweed

Facts: Hides in crevices during the night.  
Has extremely sharp teeth for biting into hard coral.

## Trigger Fish



Price: £1000 for 5

Eats: Plankton and small invertebrates

Facts: Has hard spines that stop them from being pulled out of crevices.  
Defend their nests aggressively.

## Moray Eel

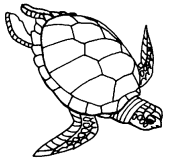


Price: £10,000 for 4

Eats: Shrimp and small fish

Facts: Only hunts during the night.  
Has two sets of jaws.  
Hides in holes between rocks.

# Information Cards – Tropical Sea



## Cleaner Shrimp



Price: £500 for 100

Eats: Plankton and small invertebrates

Facts: Eats dead material and parasites.  
Large fish visit cleaner shrimp to have harmful parasites removed.

## Plankton



Price: £500 per tank

Eats: Tiny pieces of dead matter or use sunlight for photosynthesis.

Facts: Made up of tiny animals and plants.  
Includes baby sea creatures and larvae.

Plant plankton are the commonest plants on Earth.

## Green Turtle



Price: £20,000 each

Eats: Seaweed and algae

Facts: Can live to be hundreds of years old.  
Females return to the same beach each year to lay eggs.  
Babies eat small fish and invertebrates.

## Sea Dragon

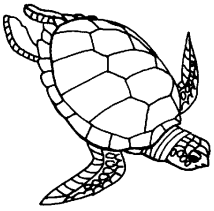


Price: £10,000 for 5

Eats: Seaweed and algae

Facts: Disguised as seaweed to avoid predators.  
Females pass eggs to males who “give birth” to live young.





# Planning your aquarium finances

## Running costs

You need to work out your running costs.

How big are your tanks and how many people will you need to employ?

## What are your outgoings?

Small tanks     £1000  
Medium tanks   £2000  
Large tanks     £5000

## Staffing costs

How much are you going to pay your staff and how many staff will you need?

The minimum wage is:  
£5.52 for over 22s  
£4.60 for 18-22  
and £3.40 for under 18s

## Cleaning costs per week

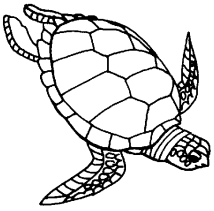
Small tank       £50  
Medium tank     £100  
Large tank       £250

## Going further

Work out how much you will need to charge for entrance fees to the aquarium.

How many customers will you need each week to make a profit?





# Planning your aquarium finances

## Running costs

You need to work out your running costs.

Which size premises will you rent and how much will it cost you to feed your fish?

## Feeding the fish

Tropical freshwater - £50 per week for every 100 fish

Tropical sea - £75 per week for every 100 fish

Cold freshwater - £100 for every 100 fish

Cold sea - £75 per week for every 100 fish

## Rent for premises per week

Small premises      £1000

Medium premises    £1750

Large premises      £2500

## Going further

Can you compete with other families to make the largest profit?

Each family group will be allocated 1000 shares which will be monitored over the weeks to see if it increases or decreases your profits.

