

E1-E2 Functional Maths – Making a mini wildlife pond

Contents and record sheet



Name _____ Date _____

Your teacher will suggest which pages to work on.

Topic	Page(s)	Maths topics and levels (main topic in bold)	✓ when complete	Marks optional
Contents	1	Contents and student record sheet.		
Introduction	2-3	Pat and Mitch. How to complete this workbook. Key words. Discussion and vocabulary ideas.		
Preparing the pond Q1-Q9	4	2D shapes (E1) Counting (E1) Odd & even numbers (E2)		4
	5	3D shapes (E2) Odd & even numbers (E2) Use dimensions (E1) Use centimetres / units (E2)		7
	6	Use kilograms (E2) Fractions (E2) Counting (E2) Subtraction (E1) Tallies (E1-2)		7
	7	Position (E1-2) Using centimetres (E2) Multiplication / times tables (E2)		11
Buying water plants Q10-Q16	8	Counting (E1) Position (E1-2)		3
	9	Sorting (E1) Addition & subtraction (E1) Comparing depths / heights / numbers (E1)		7
	10	Addition & subtraction (E1) Money (E1) Extract from lists (E1) Interpret symbols (E1)		11
Filling the pond with water Q17-Q18	11	Use litres & centimetres (E2) Rounding (E2) Subtraction (E2) Multiplication / tables (E2)		11
Watching the wildlife in and around the pond Q19-Q22	12	Seasons and months of the year (E1)		6
	13	Block graph / diagram (E1)		8
	14	Tally chart and bar chart (E2)		10
	15	Extract, sort & compare data; 2-way tables (E2)		15
				100

E1-E2 Functional Maths – Making a mini wildlife pond

Introduction

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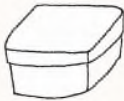
Pat and Mitch like to work in their garden.
They see this leaflet. They decide to make a mini wildlife pond.

How to build a mini wildlife pond



You will need:

- a watertight container*



- old bricks, rocks and pebbles



- pond plants



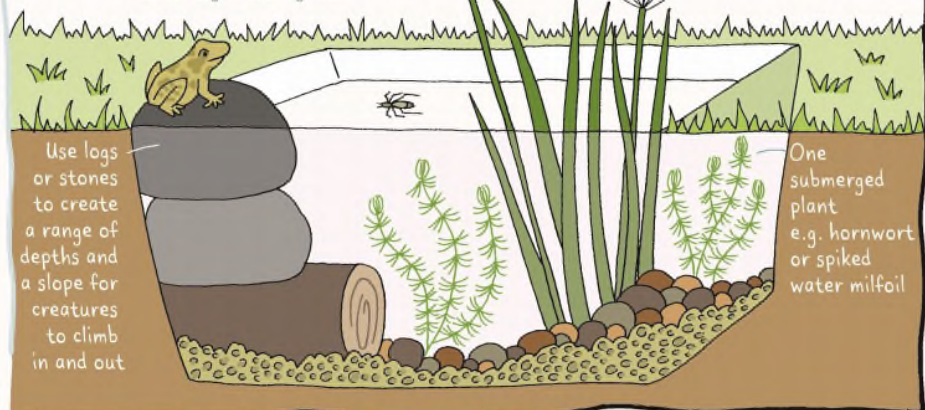
- spade



* Is there anything that you can upcycle? It could be an old washing-up bowl, sink or even a plant pot. Aim for 20-30cm deep.

- 1 Choose a spot. Your pond will need light, but not full sunlight all day. You can dig a hole and sink your container, or just have it sitting on top.
- 2 If the container isn't watertight, e.g. an old plant pot, then add a piece of pond liner.
- 3 Add a layer of gravel and rocks.
- 4 Fill your pond with rainwater (tap water contains chemicals).
- 5 Start planting... you only need two or three plants.
- 6 Now watch and wait! Wildlife will come to your pond of its own accord.

One vertical growing plant that reaches out of the water e.g. flowering rush



www.wildaboutgardens.org.uk

Don't introduce frogs, fish or even water from another pond as this can spread disease.

Source: <https://www.wildaboutgardens.org.uk> Illustrator: Corinne Welch © Royal Society of Wildlife Trusts & Royal Horticultural Society 2019.

How to complete this work book.



Write your answer where you see the pencil.

For *most* questions you will get 1 mark for a correct answer.

You also get marks for showing your working (even if your final answer is wrong), using units of measure, and drawing graphs and charts correctly.



Where you see this notebook, you must show how you get your answers.

You will get extra marks for showing your working.

Your working can be calculations, diagrams or pictures.

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Introduction

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Before you start, check you can read and understand these words.

Maths words

Shapes	Graphs and charts	Measures	Numbers
2D	2-way table	deep / depth	odd / even
circle	bar chart	deeper / deepest	Calculations
rectangle	block graph	high / height	difference between
square	data	large / medium / small	working (out)
star	tally chart / mark	long / length	check (answer)
triangle		tall / short	Symbols
3D	Position	wide / width	+ - x ÷ =
cube	above / below	centimetre / cm	£
cuboid	right (of) / left (of)	kilogram / kg	Comparing
cylinder	top / bottom	litre / l	fewer / less / more
sphere	underneath	Time	fewest / least / most
		month / season	



Discuss the maths words with a friend or your teacher.



You may want to highlight the maths words when you see them in the workbook.

Pond words

aquatic centre	gravel	pond skater	water snail
brick	insect	sink	(water) tank
dragonfly	marbles	water beetle	watering can
frog	pebble	water butt	



Work in pairs.

1. Choose a **pond word**.
2. Don't tell your partner the word.
3. Describe it to your partner without saying the word.
4. Your partner has to guess the word.
5. Now swap roles.

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Name _____ Date _____

Show your working out. Write your answer. No calculator.

1. Pat and Mitch make a mini wildlife pond. They use an old sink.
This is the shape of the top of the sink.



What is the name of this shape?

Tick (✓) the correct answer.

square

triangle

rectangle

star

(E1.9. 1 mark)

2. Mitch reads that bricks like this are good in ponds.
Small animals can hide in them.



a. **What shape are the holes in the brick?**



(E1.9. 1 mark)

b. **How many holes are in the brick?**



(E1.2. 1 mark)

c. **Is your answer to 2b an odd or an even number?**



(E2.3. 1 mark)

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Show your working out. Write your answer. No calculator.

3. Pat digs a hole for the sink to fit into.

a. What 3D shape is the hole?

Tick (✓) the correct answer.

- cube
- cylinder
- sphere
- cuboid



(E2.19. 1 mark)

b. The sink is 30 cm deep, 35 cm wide and 50 cm long.

Label the sink with the correct measurements.

(E1.8, E2.14. 3 marks)

4. Pat finds some old marbles when he digs the hole.

a. What 3D shape are the marbles?

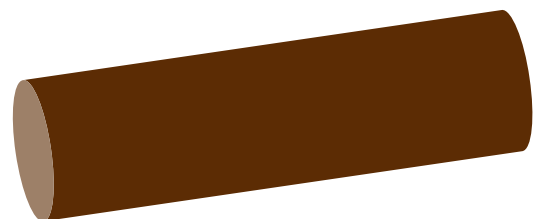
b. Is there an odd or even number of marbles?



(E2.13, E2.19. 2 marks)

5. Mitch finds two logs to put in the pond.

What 3D shape are the logs?



(E2.19. 1 mark)

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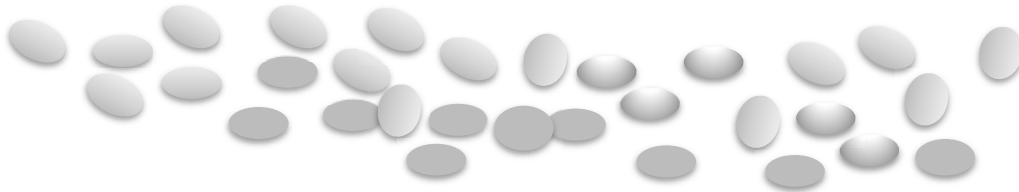
 Show your working out.  Write your answer.  No calculator.

6. Mitch has a 12kg bag of gravel.
Mitch puts half the gravel in the bottom of the sink.
How many kilograms of gravel are left in the bag?




(E2.10, E2.15. 2 marks)

7. Pat has some pebbles to put in the pond.



a. **How many pebbles are there?**  _____ (E2.1. 1 mark)

b. **To check your answer, complete the tally chart to show the number of pebbles.**



Tip: as you draw each tally mark, cross off each pebble so you don't miss any.
Don't forget to cross off the five already shown in the tally chart.

Number of pebbles: 



(E1.13, E2.1. 2 marks)

c. **9 pebbles get lost. How many pebbles are left?**

(E2.5. 2 marks)

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Show your working out. Write your answer. No calculator.

8. Pat and Mitch put all the items in the sink.



Use some of these words to write sentences about the position of the items. You will get extra marks if you use 5 or more different words.

bottom

above

on top of

right of

below

underneath

left of

 a. The gravel is _____.

 b. The pebbles are _____.

 c. The marbles are _____.


 d. The brick is _____.

 e. The large log is _____.

 f. The small log is _____.

(E1.10, E2.21. 8 marks)

9. The small log is 6 cm long. The large log is 4 times longer.
How long is the large log?

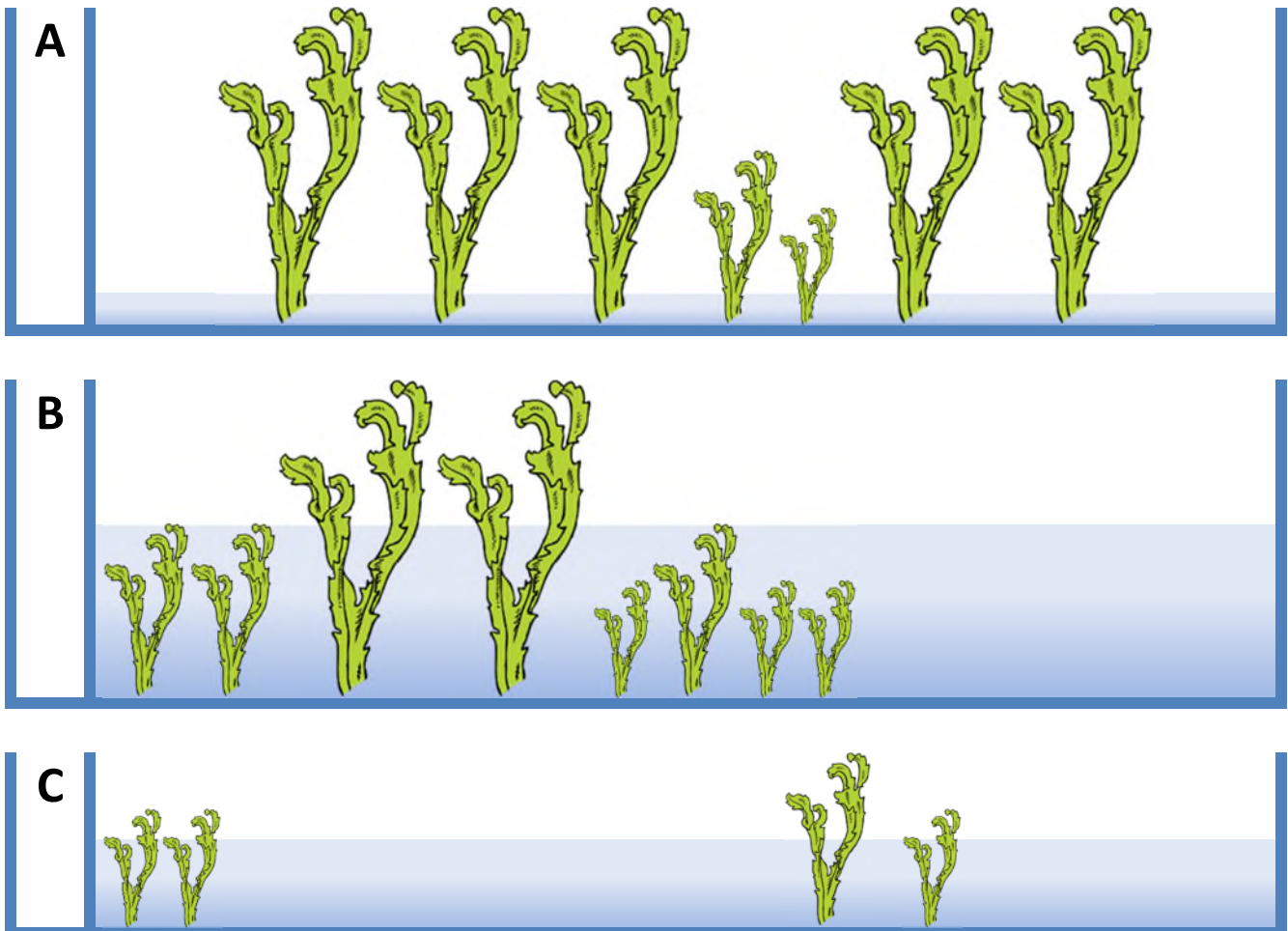
(E2.6, E2.14. 3 marks)

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Name _____ Date _____

Show your working out. Write your answer. No calculator.

10. Pat and Mitch want some plants for the pond. They go to the aquatic centre.



a. How many plants are in the top tank?

(E1.2, E1.10, E2.21. 1 mark)

b. How many plants are in the bottom tank?

(E1.2, E1.10, E2.21. 1 mark)

c. How many plants are there altogether?

(E1.2. 1 mark)

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Name _____ Date _____

 Show your working out.  Write your answer.  No calculator.

11. The aquatic centre sells **tall**, **short** and **medium height** plants

a. How many medium height plants are there?





(E1.2, E1.8, E1.12. 1 mark)

b. How many short plants are there?



(E1.2, E1.8, E1.12. 1 mark)

c. What is the difference between the number of short plants and the number of medium plants?

(E1.2, E1.3. 2 marks)

d. Use the words below to complete the sentences.

most

fewest



Tank C has the _____ plants.



Tank B has the _____ plants.

(E1.1, E1.2. 1 mark)

e. Use the words below to complete the sentences.

deeper

deepest



Tank C has _____ water than tank A.



Tank B has the _____ water.

(E1.8. 1 mark)

f. Which two tanks are the same height?



(E1.8. 1 mark)

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Name _____ Date _____

 Show your working out.  Write your answer.  No calculator.

12. a. Which tank has no tall plants?

Tick (✓) the correct answer.

Tank A

Tank B

Tank C

b. Give a possible reason why this is.  _____

(E1.8, E2.24. 2 marks)

13. Pat chooses 3 tall plants.

How many tall plants are left in the tanks?

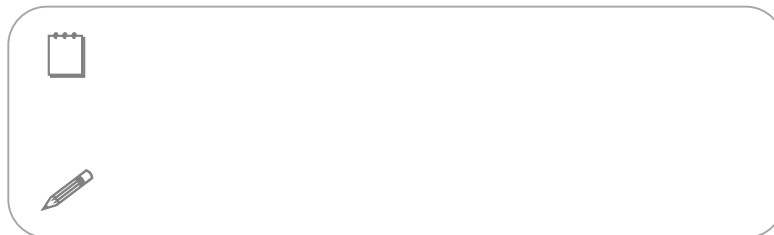


Working out area for question 13, containing a notepad icon and a pencil icon.

(E1.2, E1.3. 2 marks)

14. Pat looks at the price list. He says it costs £6 for the three tall plants.

Is Pat right? Yes or no?



Working out area for question 14, containing a notepad icon and a pencil icon.

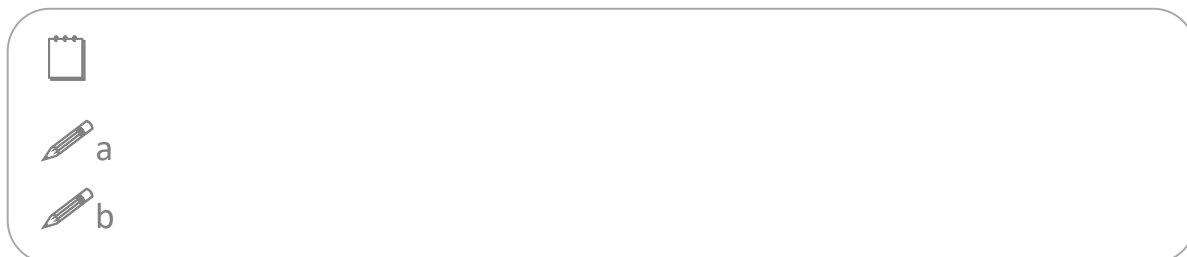
<u>Pond plants</u>	
<i>tall</i>	<i>£4 each</i>
<i>medium</i>	<i>£2 each</i>
<i>short</i>	<i>£1 each</i>

(E1.3, E1.5, E1.11. 3 marks)

15. Pat wants to buy 5 plants altogether.

a. How many more plants does he buy?

b. Show how you can check your answer to question 15a.

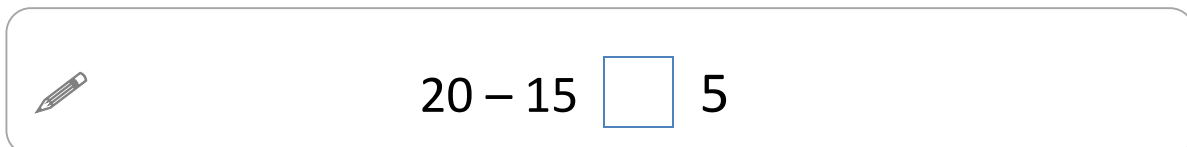


Working out area for question 15, containing a notepad icon and two pencil icons labeled 'a' and 'b'.

(E1.3. 3 marks)

16. Pat spends £15 on plants. Pat checks his change from a £20 note.

What is the missing symbol?



Working out area for question 16, containing a pencil icon and the equation $20 - 15 \square 5$.

(E1.4. 1 mark)

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 Show your working out.  Write your answer.  No calculator.

It's time to fill the pond with water!

Mitch uses rainwater from the water butt.

The water butt is full.

It holds **95 litres** of water.



17. Mitch uses a 10 litre watering can. Mitch uses 4 cans of water to fill the pond.

a. How much water is that?



(E2.6, E2.16. 3 marks)

b. How much water is left in the water butt?



(E2.5, E2.16. 3 marks)

c. Round your answer to 17b to the nearest 10 litres. _____

(E2.9. 1 mark)

18. Mitch leaves a 4 cm space at the top of the sink so it doesn't overflow when it rains.

The sink is 28 cm deep (on the inside).

a. How deep is the water in the sink? (Measured to the bottom of the gravel).



(E2.5. 3 marks)

b. Round your answer to 18a to the nearest 10 cm. _____

(E2.9. 1 mark)

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Name _____ Date _____

 Show your working out.  Write your answer.  No calculator.

The mini wildlife pond is finished!




19. Mitch reads this.


Insects and other small creatures will appear in and around the pond after **2 months**.

Frogs will take longer but should appear after about **10 months**.

Mitch and Pat build the pond in **May**.

 a. What season is May in? _____

 b. How many days are there in May? _____

 c. In what month will Pat and Mitch see insects? _____

 d. In what month *might* they see frogs for the first time? _____

Use this space to show how you worked out 19c and 19d.



(E1.7. 6 marks)

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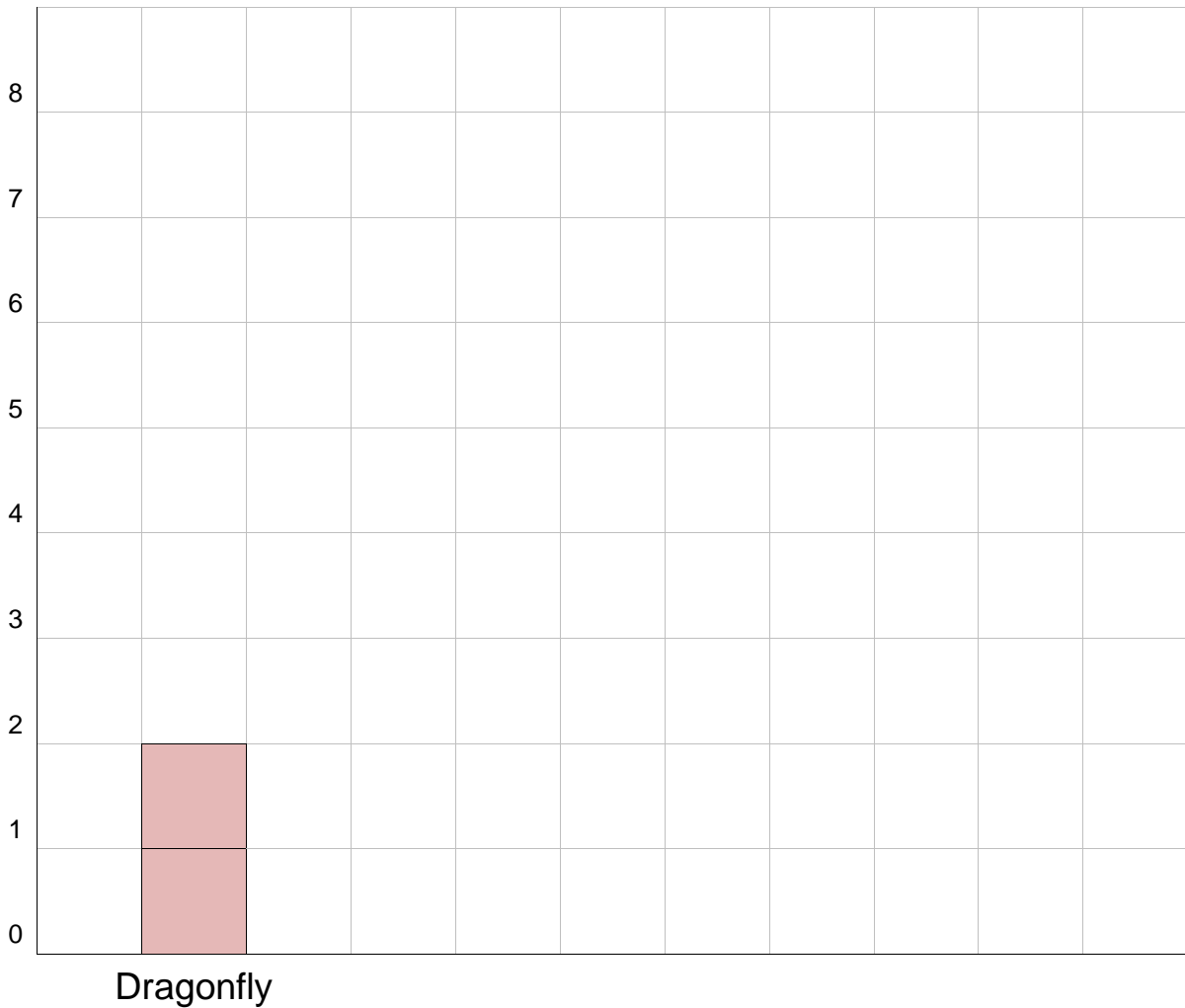
Show your working out. Write your answer. No calculator.

20. Two months later Pat watches the pond for an hour. He makes this table.

a. Use the data in the table to complete the block graph.

Use a ruler. One item has been done for you.

Dragonfly	2
Frog	0
Pond skater	1
Water beetle	4
Water snail	7



(E1.13. 6 marks)

b. Write two sentences about the wildlife Pat sees in the mini pond.



_____.



_____.



(E1.13. 2 marks)

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Name _____ Date _____

Show your working out. Write your answer. No calculator.

21. A year later Mitch watches the pond for an hour and makes this tally chart.

Water snails	### ### ///
Dragonfly	///
Water beetles	### ### ////
Pond skater	###
Frog	

Use the data in the tally chart to create a bar chart.

Choose a suitable scale. Label the chart clearly and give it a title. Use a ruler.

Title: _____







(E2.25. 10 marks)

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 Show your working out.  Write your answer.  No calculator.

22. Answer these questions using the bar chart you made in Q21.

-  a. What was the most common animal? _____
-  b. What was the least common? _____
-  c. How many more water beetles than pond skaters? _____
-  d. How many animals did Mitch see altogether? _____

Use this box to show any working out.



(E2.23. 6 marks)

23. Use the information in Q20 and Q21 to complete the missing data in this two-way table.

	After 2 months	After 1 year
Water snails		
Pond skaters		
	2	3
		1
Water beetles		

(E2.22, E2.24, E2.25. 9 marks)