

World Ocean Day Maths Challenge

Maths have set a series of challenges linked to water, ocean life and the problems of plastic pollution.

Challenge 1: Water based problem Solving

Challenge 2: Questions based on ocean pollution (using statistics)

Challenge 3: Solve the equations to find the names of the ocean life.

To complete the challenges set you can use the conversion sheet to help (the final pages of the document)

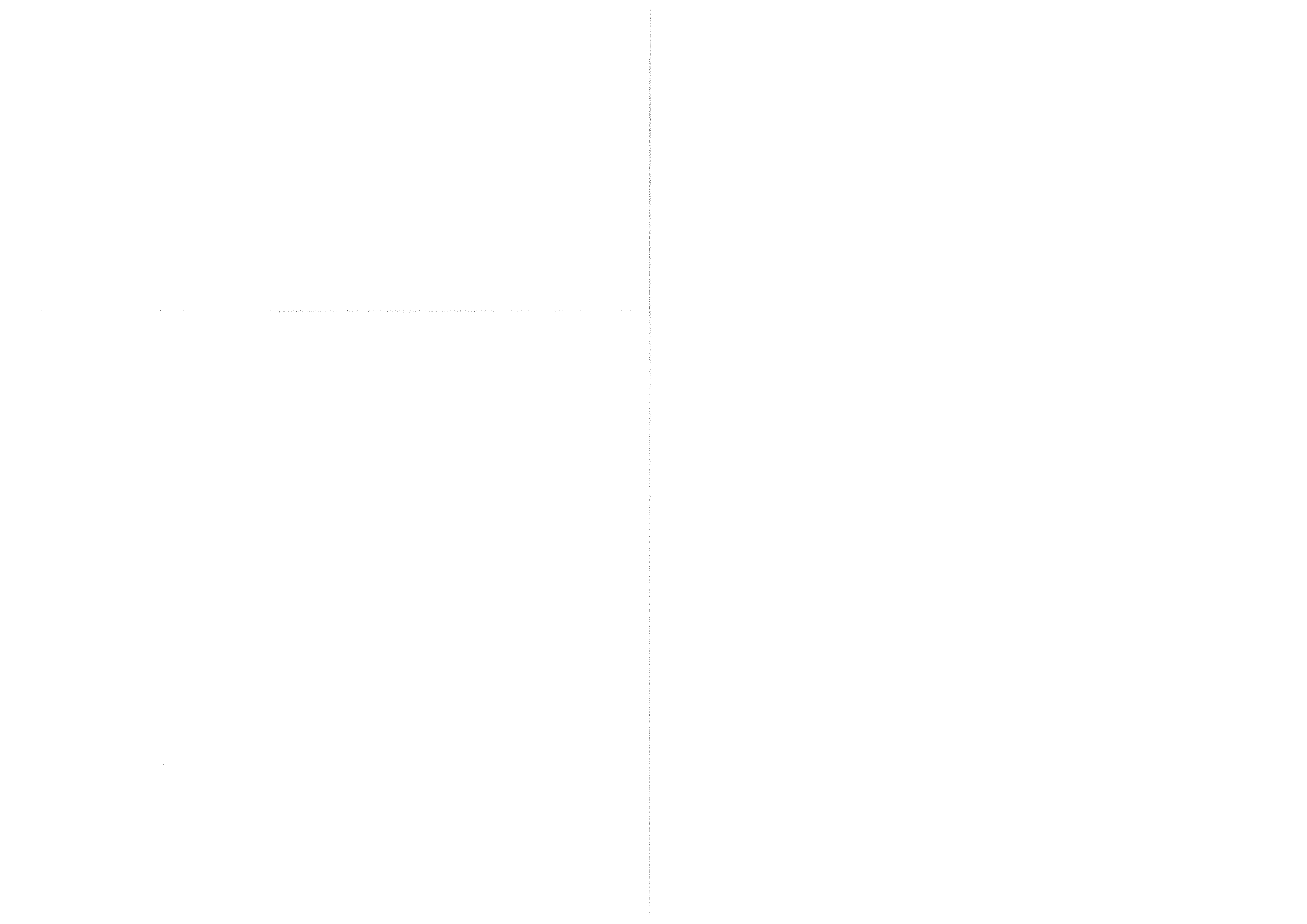
Water based problem solving questions

- 1) 15 taps run full power for 3 hours to fill a swimming pool.
How long will it take to fill the pool with:
 - (a) 3 taps
 - (b) 12 taps

- 2) The volume of a swimming pool is 150m^3 .
If a pump processes 50 litres per minute, how many hours will it take to filter the whole pool?

- 3) A pool is in the shape of a cuboid with dimensions of 2m deep, 10m long and 4m wide.
How many litres of water are needed to fill the pool?

- 4) A greenhouse contains 40 tomato plants.
Each plant requires 5 litres of water per day.
The plants need watering for 50 days.
The water company charges £2.54 per cubic metre.
How much will it have cost to water the tomato plants?



Questions based on ocean pollution (using statistics from 2018).

- 1) What percentage of plastic is recycled?
 - A 9%
 - B 19%
 - C 39%
 - D 99%

- 2) How long can a plastic bottle last in the ocean?
 - A 23,400 weeks
 - B 5,400 months
 - C 450 years
 - D forever

- 3) More than 1 million plastic bags end up in the rubbish every:
 - A minute
 - B hour
 - C day
 - D week

- 4) How many plastic straws litter the world's beaches?
 - A 4 million
 - B 8.3 million
 - C 83 million
 - D 8.3 billion

- 5) How much of the Earth's oxygen is produced by marine plants?
 - A 20%
 - B 50%
 - C 70%
 - D 95%

- 6) How big is the Great Pacific Garbage Patch?
 - A 500 km²
 - B 160,000 km²
 - C 500,000 km²
 - D 1,600,000 km²

$$(13) (9-2)^2 + 10 \div 2 =$$

$$(14) 4 + 7 - 6 =$$

$$(15) (9-4)^2 + 9 =$$

$$(16) 6^2 \div (2 \times 9) =$$

$$(17) 9^2 - 8 \times 6 =$$

$$(18) 3 + (10-4)^2 =$$

$$(19) 7 \times (6-2) =$$

$$(20) (4+2)^2 \div 3 =$$

$$(21) 49 \div (3+4) =$$

$$(22) 5^2 - 4^2 =$$

$$(23) 33 \div (4+7) =$$

$$(24) 3 \times 2 - (6+6) =$$

$$(25) -5 - -13 =$$

$$(26) 7^2 - 5^2 =$$

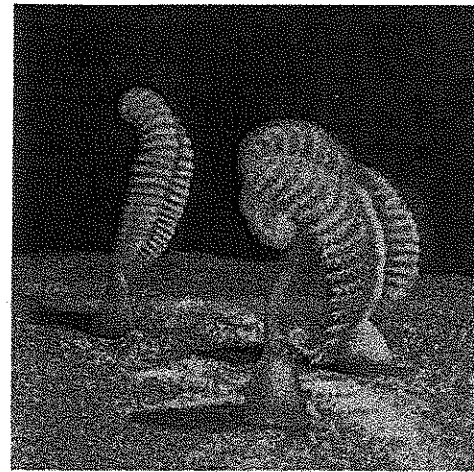
KEY

A	B	C	D	E	F	G	H
19	21	33	5	37	49	17	57

I	J	K	L	M	N	O	P	Q
12	2	9	-10	-6	-1	56	4	8

R	S	T	U	V	W	X	Y	Z
39	34	16	24	3	28	54	7	10

33	-10	56	28	-1	49	39	56	17	49	12	34	57
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$$\textcircled{7} (8 \times 4 + 8) \div 4 =$$

$$\textcircled{8} (8 - 5)^2 + 7 =$$

$$\textcircled{9} 7 \times 2 - 8 \times 3 =$$

$$\textcircled{10} 8^2 - 8 =$$

$$\textcircled{11} 2^3 + 3^2 =$$

$$\textcircled{12} 7 + 5 \times 6 =$$

39	37	5	-	10	12	4	4	37	5	21	19	16	49	12	34	57
			-													



3	19	-6	4	12	39	37	34	8	24	12	5
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$$\textcircled{1} 3 + 4^2 =$$

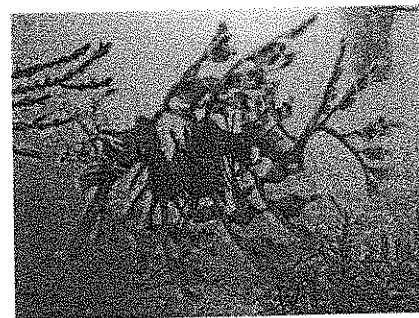
$$\textcircled{2} (4 + 3)^2 =$$

$$\textcircled{3} 8 - 3^2 =$$

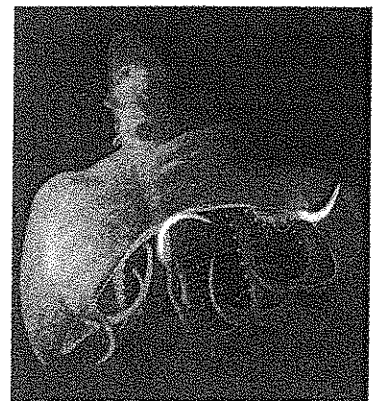
$$\textcircled{4} 3^2 + 4 \times 3 =$$

$$\textcircled{5} 9 - (3^2 - 4) =$$

$$\textcircled{6} 7 \times 8 + 1 =$$



34	37	19	4	37	-1
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21	-10	56	21	34	33	24	-10	4	12	-1
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-10	37	19	49	7	34	37	19	5	39	19	17	56	-1
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Water is important in maths. It links the metric units of volume and mass.

Its density means:

$$1 \text{ cm}^3 = 1 \text{ ml} = 1 \text{ g}$$

$$1000 \text{ cm}^3 = 1 \text{ l} = 1 \text{ kg}$$

$$1 \text{ m}^3 = 1000 \text{ l} = 1 \text{ tonne}$$

$$1 \text{ m}^3 = 1,000,000 \text{ cm}^3$$

$$1 \text{ kg} = 1000 \text{ g}$$

$$1 \text{ l} = 1000 \text{ ml}$$

500 cm³ = ml

500 cm³ = litres

5 m³ = litres

5 litres = kg

0.5 tonnes = kg

5,000,000 cm³ = tonnes

3.2 kg = ml

3200 cm³ = litres

320 ml = litres

32 kg = litres

3.2 tonnes = kg

320 cm³ = kg

0.32 kg = cm³