

# Free UKCAT Practice Test Questions

(With answers and explanations)

*JobTestPrep invites you to take a free practice session to check out some of the materials offered in our online practice packs.*

## What does this test contain?

1. Four Quantitative Reasoning questions
2. Four Abstract Reasoning questions
3. Four Verbal Reasoning questions

Total time allotted: 10 minutes

**GOOD LUCK!**



**Job Test Prep**

# UKCAT Quantitative Reasoning

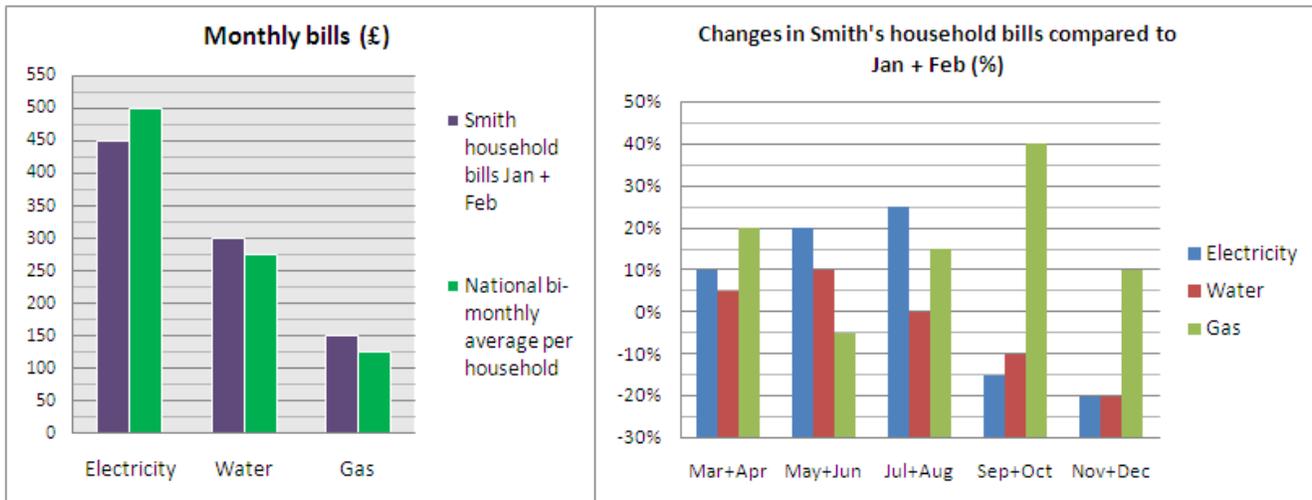
The UKCAT Quantitative Reasoning section assesses one's ability to solve numerical problems. Nevertheless, since this is a psychometric test, it is certainly not all about mathematics. Rather, this subtest is actually more about solving reasoning problems using numbers.

The advantage to JobTestPrep's UKCAT preparation is not merely the fact that our practice questions mirror UKCAT questions, but, more importantly, that we provide easy to use solving strategies and tips for cracking the types of questions on the UKCAT.

- The following short sequence of four questions provides a glimpse into the Quantitative Reasoning section.
- Each question may include additional information, which may influence or change the interpretation of the initial data.
- The levels of difficulty are not necessarily uniform. A set might begin with a difficult question, which is then followed by a simple one, and vice versa.
- You may find that the completely accurate answer is not provided in the answer choices (e.g. – imprecise decimal figures). No need to be concerned, as this is part of the test. In cases such as these, you must select the best, most suitable answer. If you cannot find one, check your solution again.

Make sure you have a calculator. We recommend using your PC's calculator since it most resembles the screen calculator you will be provided with on the real test.

1. The Smiths are investigating irregularities in their household bills. Below are two charts analysing these payments:



How many of the Smith household's bimonthly electricity bills are higher than the national average?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

### Explanation

The national average of a bimonthly electricity bill is £500 (green column).  
The Smith's bimonthly electricity bill for Jan+Feb was £450 (blue column).

The chart on the right informs us of changes to the bimonthly electricity bill relative to the Smiths' Jan+Feb bill. Therefore, not every increase necessarily represents a higher payment than the national average.

Note that the bills for Sep+Oct and Nov+Dec were lower than the bill for Jan+Feb, and thus they cannot be higher than the national average given that Jan+Feb's bill was already lower than the national average. Therefore, the Sep+Oct and Nov+Dec bills can be eliminated from the start.

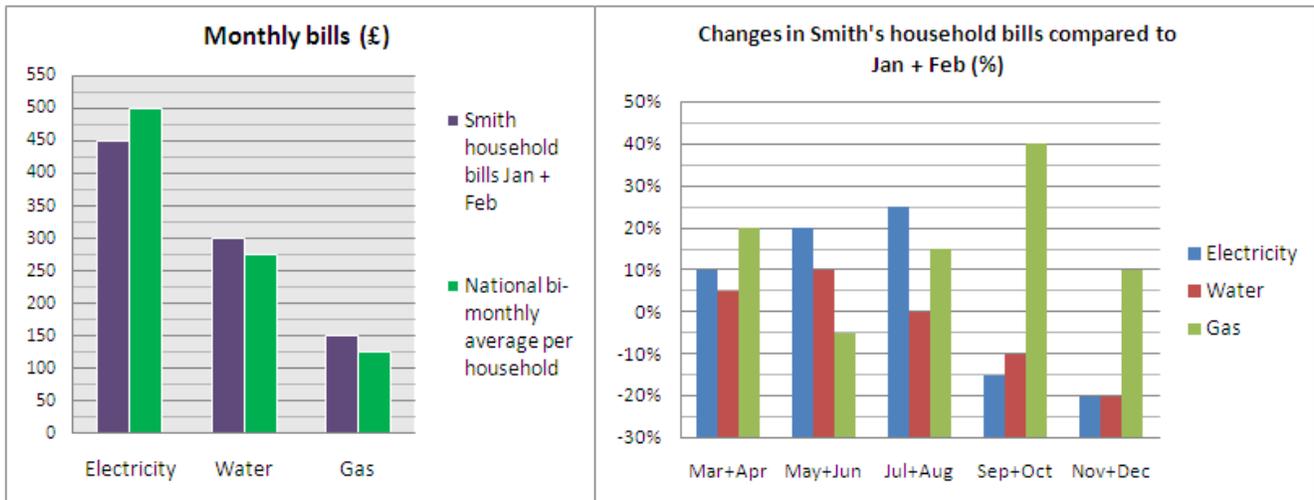
The electricity bill for Mar+Apr was 10% higher than the bill for Jan+Feb:  
110% of £450 =  $1.1 \times 450 = £495 < 500\%$ . This is not higher than the national average.

The electricity bill for May+Jun was 20% higher than the bill for Jan+Feb:  
120% of £450 =  $1.2 \times 450 = £540 > 500\%$ . This is higher than the national average.

The electricity bill for Jul+Aug was 25% higher than the bill for Jan+Feb. Because this is a higher figure than the previous bimonthly bill, we already know this bill is higher than the national average. Therefore, we don't need to calculate the actual sum.

**The correct answer is C: Two bimonthly electricity bills, those of May+Jun and Jul+Aug.**

2. The Smiths are investigating irregularities in their household bills. Below are two charts analysing these payments:



What is the annual average water bill in the Smith household?

- A. 307.5
- B. 292.5
- C. 285
- D. 275
- E. 242.5

## Explanation

An average is usually calculated as the sum of several elements divided by the number of the elements. This can be done in our case, but it is not necessarily required. When solving a UKCAT question, you want to answer correctly, yet answering as quickly as possible is also a major consideration. We will present two possible solution methods. Try to practise the method you find most suitable for you:

### Straightforward solution:

In order to perform the average, we first calculate each bimonthly bill's value:

$$\text{Jan+Feb} = \text{£}300$$

$$\text{Mar+Apr} = 105\% \text{ of } 300 = 1.05 \times 300 = \text{£}315$$

$$\text{May+Jun} = 110\% \text{ of } 300 = 1.1 \times 300 = \text{£}330$$

$$\text{Jul+Aug} = 100\% \text{ of } 300 = \text{£}300$$

$$\text{Sep+Oct} = 90\% \text{ of } 300 = 0.9 \times 300 = \text{£}270$$

$$\text{Nov+Dec} = 80\% \text{ of } 300 = 0.8 \times 300 = \text{£}240$$

Now we can perform the yearly average:

$$\text{Average water bill} = (300+315+330+300+270+240)/6 = \text{£}292.5$$

### Short, elegant solution:

In this method we still perform an average, but we use values directly from the chart:

The yearly average is comprised of six bimonthly bills, yet all the bills are relative to the Jan+Feb bill, so this known sum can be used as a base to which we can add/subtract the relative differences. Moreover, since every bill's change is relative to the same bill, we can add the total changes along the year:

According to the chart, the relative changes of the six yearly bills are respectively 0% (Jan+Feb relative to itself), 5%, 10%, 0%, -10%, and -20%. This sums to a -15% change across the year, or an average of a  $(-15)/6 = (-2.5)\%$  yearly change relative to Jan+Feb's bill.

$$\text{The average yearly water bill is } \text{£}300 - 2.5\% \text{ of } \text{£}300 = 300 - 0.025 \times 300 = 300 - 7.5 = \text{£}292.5$$

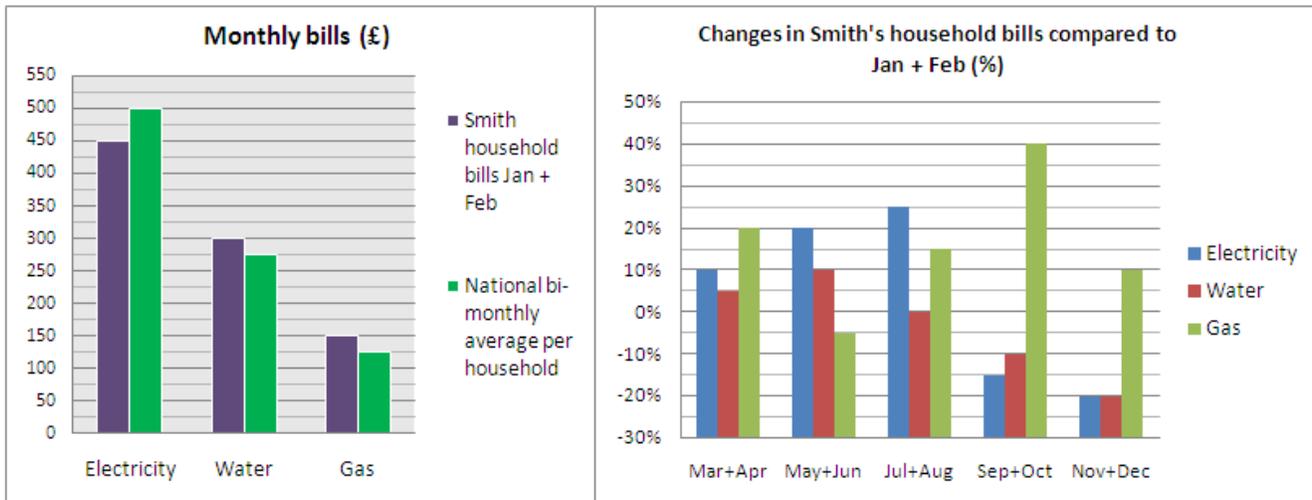
### Solving Tip – working with distracters:

There could have been a distracter — £291. One could get such a figure by omitting the value of the first bimonthly bill of Jan+Feb. Yet, this number does not appear within the answer choices. The probable reason for this is to try and help prevent you from making mistakes that are based solely on a minor lack of attention.

Our message is, if you ever feel really sure about your answer, yet you cannot find it within the answer choices, it might just be a hint that you have skipped a small step. Revise the question and gain your deserved points.

**The correct answer is B: 292.5**

3. The Smiths are investigating irregularities in their household bills. Below are two charts analysing these payments:



What is the difference between the national monthly average and the Smith's household bill for Sep+Oct?

- A. The Smith household's bill is higher by 57.5 £
- B. The Smith household's bill is higher by 37.5 £
- C. There is no difference between the bills
- D. The Smith household's bill is lower by 37.5 £
- E. The Smith household's bill is lower by 57.5 £

### Explanation

A careful examination of the first chart (Jan+Feb bill compared to national average) will reveal that there is no difference between the Smith's total payment and the national average. The Smith's electricity bill is lower than the average bill by £50, but both the water and gas bills are higher than the national average by £25. Hence, the total difference is £0. We can conclude that in order to calculate the difference between the national average household payments and the Smith's household payment for Sep+Oct, all we need to do is to calculate the change between the bills for Jan+Feb and for Sep+Oct:

Sep+Oct change of Electricity bill = -15% of Jan+Feb =  $-0.15 \times £450 = -£67.5$

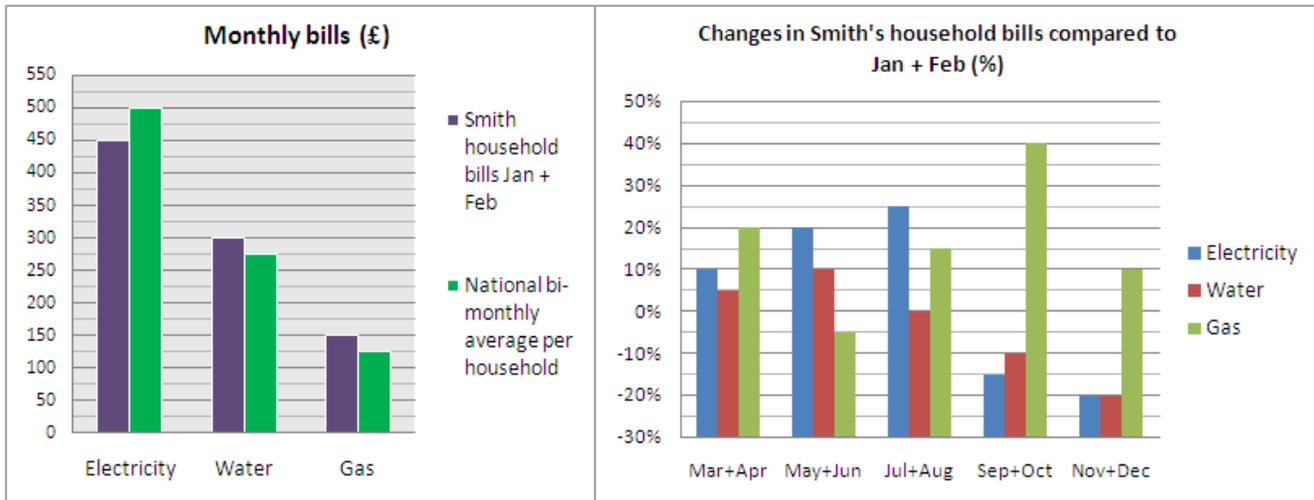
Sep+Oct change of Water bill = -10% of Jan+Feb =  $-0.1 \times £300 = -£30$

Sep+Oct change of Gas bill = +40% of Jan+Feb =  $0.4 \times £150 = £60$

Total change =  $(-67.5-30+60) = -£37.5$ , as option D suggests.

**The correct answer is D: The Smith household's bill is lower by 37.5 £**

4. The Smiths are investigating irregularities in their household bills. Below are two charts analysing these payments:



If the amount paid for electricity in May was twice as high as that which was paid in June, what was the amount paid in June?

- A. 180
- B. 150
- C. 360
- D. 270
- E. Cannot say

## Explanation

May+Jun is a bimonthly bill. If the amount paid for electricity in May was twice as high as that of June, it means that the ratio between May to June within this bill is 2:1.

First, calculate the sum of the bill:

Bill of May+Jun = 120% of Jan+Feb = 120% of 450 =  $1.2 \times 450 = \text{£}540$

The amount paid for June =  $540/3 = \text{£}180$

Solving Tip – How to define a ratio:

Most ratios are presented in the form of  $x:y$ , although ratios can have more than two components (e.g.  $x:y:z$ ). In order to calculate the exact amount of one of the components of an  $x:y$  ratio, do the following:

1. Figure out the object of the ratio. Let's name it M. In our case  $M$  = the sum of the electricity bill for May+Jun.
2. Count the number of units which comprise the ratio –  $x+y$
3. Calculate the value of a single unit of the ratio:  $\text{unit} = M/(x+y)$
4. Multiply the component by the value of a single unit:  $Y = \text{unit} \times y$

Example:

A class has 35 students. The ratio between students who were graded B+ or above to students who were graded B or below was 3:4. How many students got a B+ grade or above?

1.  $M = 35$
2.  $\text{Grade} \geq B+ : \text{grade} \leq B = 3:4 \rightarrow 3+4 = 7$
3.  $\text{Unit} = 35/7 = 5$
4.  $\text{Number of grades} \geq B+ = 3 \times 5 = 15$

There were 15 students who got a B+ grade or above.

**The correct answer is A: £180**

# UKCAT Abstract Reasoning

In this subtest, you will be presented with two sets of shapes labelled 'Set A' and 'Set B'.

All the shapes in Set A are similar in some way, as are the shapes in Set B.

For each pair of Set A and Set B, you will be presented with five 'Test Shapes'. Your task is to decide whether each test shape belongs to Set A, Set B, or neither.

You will be presented with two pairs of Set A and Set B. For each pair, you will be presented with one or two items.

1.

Set A	Set B	Test Shape
		  Set A Set B Neither

## Explanation

**Set A:** There are round shapes. One of the shapes appears twice. There is an empty circle.

**Set B:** There are an even number of round shapes. There is a "star" in one of the corners.

The test shape belongs to set A since it includes a shape that appears twice and an empty circle.

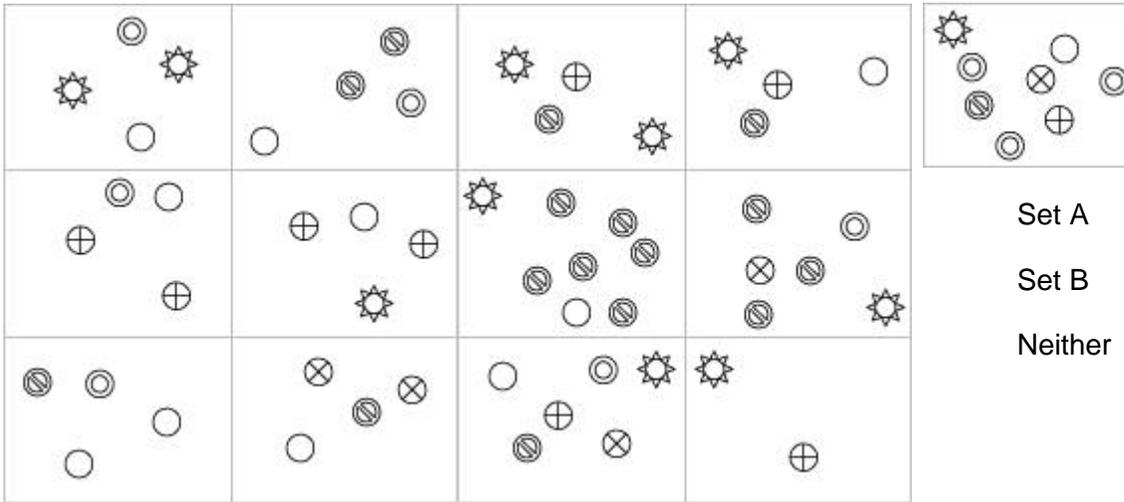
**The answer is Set A.**

2.

**Set A**

**Set B**

**Test Shape**



Set A

Set B

Neither

## Explanation

**Set A:** There are round shapes. One of the shapes appears twice. There is an empty circle.

**Set B:** There are an even number of round shapes. There is a "star" in one of the corners.

The test shape belongs to set B since it contains an even number of round shapes (8) and a star appears in the top left corner.

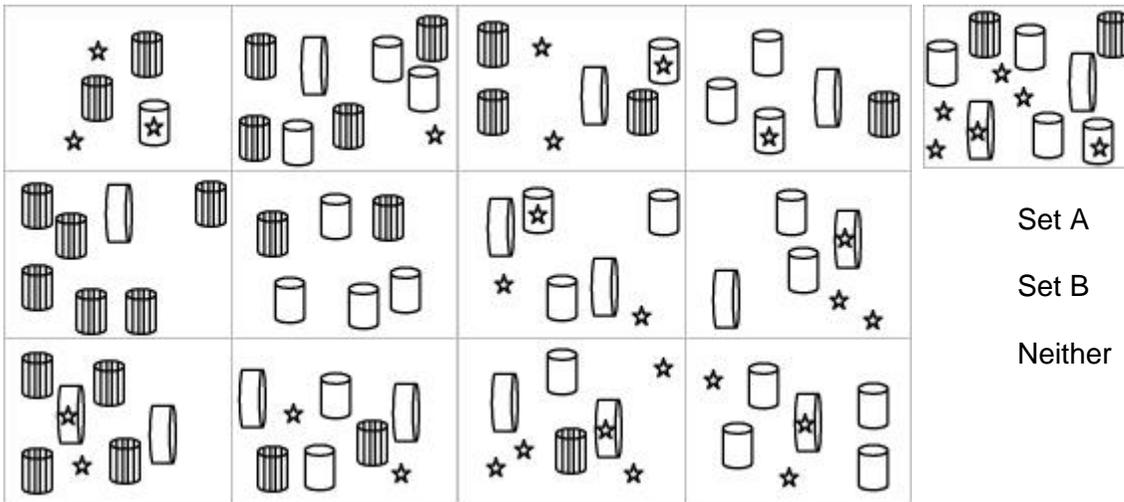
**The answer is Set B.**

3.

Set A

Set B

Test Shape



Set A

Set B

Neither

## Explanation

**Set A:** There is an even number of striped cylinders. The stars are a diversion and have no consequence.

**Set B:** There is an odd number of stars. One star is located within one of the shapes. The cylinders are a diversion.

The test shape belongs to set A since the number of striped cylinders is an even number (2).

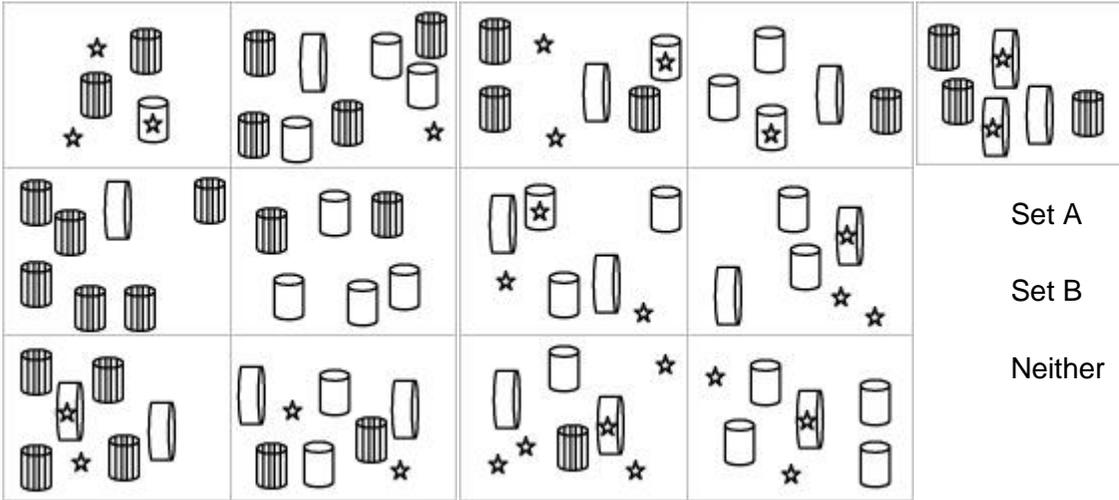
**The answer is Set A.**

4.

Set A

Set B

Test Shape



## Explanation

**Set A:** There is an even number of striped cylinders. The stars are a diversion and have no consequence.

**Set B:** There is an odd number of stars. One star is located within one of the shapes. The cylinders are a diversion.

The test shape does not belong to either set, since the number of striped cylinders is an odd number (3), and the number of stars is an even number (2).

**The answer is Neither.**

# UKCAT Verbal Reasoning

This subtest consists of two passages. Each text is followed by a statement.

- Read the passage and determine the correct answer:
  - o Choose **True** if the statement must be true according to the passage.
  - o Choose **False** if statement must be false according to the passage.
  - o Choose **Cannot say** if you cannot determine whether the statement is true or false without further information.
- REMEMBER: You are to base your answers **only** on the information provided in the text.

Passage:

Millions of years before humans invented sonar, bats and toothed whales had mastered the biological version of the same trick - echolocation. By timing the echoes of their calls, one group effortlessly flies through the darkest of skies and the other swims through the murkiest of waters. This is one of the most dramatic examples yet of 'convergent evolution', where different groups of living things have independently evolved similar behaviours or body parts in response to similar evolutionary pressures. A number of studies have shown that convergence on the surface - like having venom, being intelligent or lacking enamel - is borne of deeper genetic resemblance. A researcher sequenced the gene Prestin in a wide range of bats and whales which use sonar and which do not. Based on the DNA sequences of these Prestin versions, the researcher drew a mammal family tree. As one would expect, the whales and bats were clustered in separate family groups. But convert the sequences into amino acids and the picture changes dramatically. Suddenly, the family tree becomes utterly misleading. The echolocating mammals, be they bats or whales, are united as close relatives, to the exclusion of their rightful evolutionary kin.

It might seem strange to see such strong convergence at the genetic level, since bats and whales echolocate very differently. Bats create their sonar pulses using their voicebox while whales pass air through their nasal bones. A single gene can't have accounted for these differences. Instead, Prestin's role is in detecting the rebounding echoes. It is activated in the "outer hair cells" of the ear, which allow mammals to hear ultrasonic frequencies.

*1. Examination of the amino acid sequences resulted in the classification of one family consisting of the echolocating bats and the non-echolocating whales.*

True

False

Cannot say

### Explanation

Classifying the mammals according to the amino acid sequences resulted in the grouping of echolocating bats and whales in one family and the non-echolocating bats and whales in another.

**The answer is False.**

2. *The sting of bees and of stingrays is an example of convergence on the surface.*

True

False

Cannot say

### Explanation

The examples of convergence on the surface described in the passage are having venom, being intelligent, and lacking enamel. Possessing a stinger is a similar shared trait.

**The answer is True.**

3. *Drawing a family tree is not an accurate scientific tool.*

True

False

Cannot say

### Explanation

While the passage does mention the phrase 'the family tree becomes utterly misleading', by reading the context one sees that the issue is that a family tree will change if the single characteristic emphasized is changed. From this we cannot conclude anything about the accuracy of a family tree as a scientific tool.

**The answer is Cannot say.**

4. *Prestin is responsible for producing solar pulses in bats and whales.*

True

False

Cannot say

### Explanation

The passage does not name the genes responsible for producing echolocation. It does however state that a single gene cannot have accounted for these differences in production. Moreover, it states that Prestin's role is in detecting (not producing) *the rebounding echoes*.

**The answer is False.**

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