Year 12 Science: Biological validity: judging the science in public claims

Name: _____ Date: _____

Try these without your notes first, then check the answer key.

Practice

1. A social media post says: 'Antibiotics will help you get over the flu faster.' Label the claim and correct it.

2. A dairy company's website says milk contains calcium, which is needed to build strong bones. Label the claim, and say who produced it and a likely audience.

3. A supplement's website says: 'In our study of 15 people, 12 felt less tired after two weeks.' Give two weaknesses in this evidence.

4. A student writes: 'The Wakefield paper was peer reviewed, so its findings were valid.' What is wrong with this?

5. An article contains three claims: a true one about vitamin C, an untrue one saying its product cures colds, and a vague quote from 'scientists'. Which should rank first for Excellence, and why?

6. Why does a vested interest not automatically make a claim inaccurate?

Fix the mistake

7. Correct this statement: "The intended audience is the general public."

8. Correct this statement: "The company wants to sell it, so everything it says is inaccurate."

9. Correct this statement: "It was in a peer-reviewed journal, so it must be true."

10. Correct this statement: "For Excellence I summarised every claim again at the end."

Answer key (for parents and tutors)

1. A social media post says: 'Antibiotics will help you get over the flu faster.' Label the claim and correct it.
   Inaccurate: flu is caused by a virus, and antibiotics only work against bacteria, so they will not shorten the flu.
2. A dairy company's website says milk contains calcium, which is needed to build strong bones. Label the claim, and say who produced it and a likely audience.
   Accurate, but from a company with a vested interest in selling milk; a likely audience is parents buying food for their children.
3. A supplement's website says: 'In our study of 15 people, 12 felt less tired after two weeks.' Give two weaknesses in this evidence.
   For example: the sample is small (15 people), and there is no control group, so the 12 who felt less tired might have improved anyway or expected to; the study was also run by the seller, not peer reviewed.
4. A student writes: 'The Wakefield paper was peer reviewed, so its findings were valid.' What is wrong with this?
   Peer review does not guarantee validity: the paper used only 12 children with no control group, involved misconduct and was retracted in 2010.
5. An article contains three claims: a true one about vitamin C, an untrue one saying its product cures colds, and a vague quote from 'scientists'. Which should rank first for Excellence, and why?
   The claim that the product cures colds: it is the main selling point and it is inaccurate, so it is the one most likely to mislead readers.
6. Why does a vested interest not automatically make a claim inaccurate?
   A claim is judged on its biology; a producer with something to gain may still state an accurate fact, so you check the science and note what has been left out.
7. Correct this statement: "The intended audience is the general public."
   Name a specific group, such as parents of young children or adults who go to the gym, and say what in the article tells you.
8. Correct this statement: "The company wants to sell it, so everything it says is inaccurate."
   Vested interest makes bias likely, but each claim must still be checked against the biology; some will be accurate.
9. Correct this statement: "It was in a peer-reviewed journal, so it must be true."
   Peer review lowers the risk but does not remove it; check sample size, controls and whether other studies agree.
10. Correct this statement: "For Excellence I summarised every claim again at the end."
    Excellence ranks the claims by significance with reasons, then judges the overall effect on the audience.