

5.1 Beneficial and Harmful Effects

Name: _____ Class: _____ Date: _____

Total: 8 marks

Objective

Build the skills to answer exam questions on **beneficial and harmful effects**.

You must be able to:

- explain how a **computing innovation** 计算创新 can have both beneficial and harmful effects
- describe how a single effect may be **beneficial** to some and **harmful** to others
- explain how an innovation can have an impact **beyond its intended purpose**
- identify **unintended consequences** 意外后果

1 Worked examples

Study these first. Each one shows the method for a question type used later.

■ Both effects

Almost every computing innovation has **both** beneficial and harmful effects, and a single effect may be seen as **good by some** people and **bad by others**.

■ Beyond the intended purpose

An innovation can have an impact **beyond** what its designers intended —an **unintended consequence**.

■ Evaluating

Judge an innovation by **weighing** its benefits against its harms.

2 Practice

2.1 State why a computing innovation can be both beneficial and harmful. [1]

2.2 Give an example of an unintended consequence of a technology. [1]

2.3 State how you should evaluate a computing innovation. [1]

3 Exam-style questions

3.1 A single effect of a technology can be [1]

- **A** only good
 - **B** only bad
 - **C** good for some people and bad for others
 - **D** neither good nor bad
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3.2 An effect the designers did not intend is [1]

- **A** the main purpose
 - **B** an unintended consequence
 - **C** a syntax error
 - **D** a protocol
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3.3 Social media connects people but can also spread misinformation.

(a) State one benefit. [1]

(b) State one harm. [1]

(c) State how to judge it overall. [1]

4 Go further

- work through the **5.1 Beneficial and Harmful Effects** lesson on the **Learn** page;
- read the **Impact of Computing** section of the AP Computer Science Principles handout on the **Know** page.

Solutions

2.1 the same effect can help some people while harming others.

2.2 any reasonable example, e.g. smartphones enabling constant contact but also distraction/addiction.

2.3 weigh its benefits against its harms.

3.1 C.

3.2 B.

3.3 (a) it connects people across distances. (b) it can spread misinformation. (c) weigh the benefits against the harms.