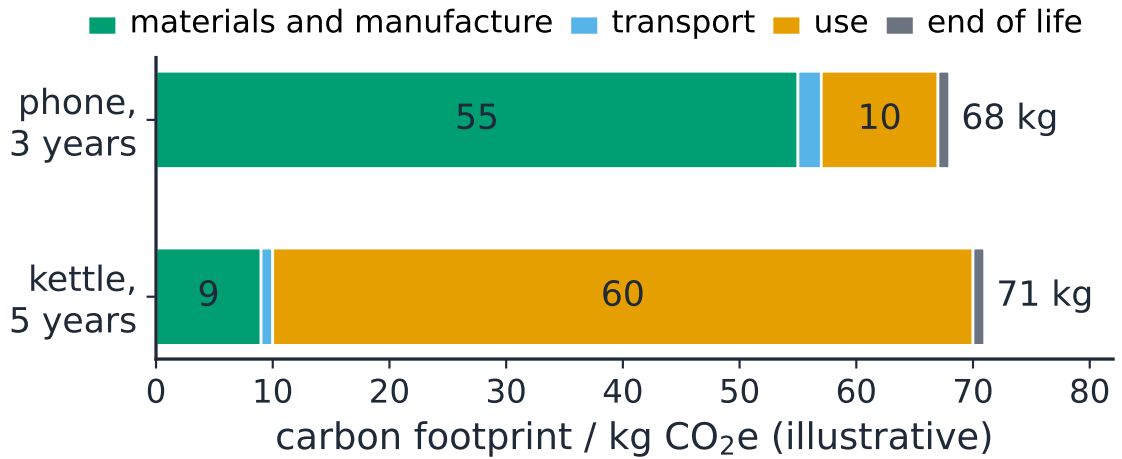
Exercise walk-through

# 3.3
# Innovation, cost, intellectual property and ethics

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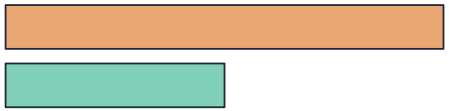
# Where is the footprint?




- Phone, 81 % from materials and manufacture.
- Kettle, 85 % from use.

# Kettle costs, drawn

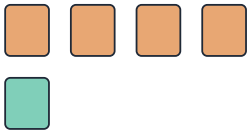
**cost per year of service**



A: $120 \div 2 = ¥60$ per year

B: $(200 + 40) \div 8 = ¥30$ per year

**kettles used over 8 years**



A: 4 kettles

B: 1 kettle, 1 repair

Dearer in the shop, half the cost per year and a quarter of the waste

> The dearer, repairable kettle costs half as much per year

# Check yourself

## Try these

Toaster A costs ¥90 and lasts 3 years; B costs ¥240 plus a ¥30 repair and lasts 10 years. Compare the cost per year.

A bag sells for ¥150; fixed costs ¥45 000, variable ¥60. Find the break-even.

Evaluate a bottle labelled eco-friendly because it has 30 % recycled plastic.

# Exercise 2.1

**2.1** Distinguish between an **invention** and an **innovation**. [2]



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**2.1**

an invention is a new idea, product or process; an innovation is an invention that has been brought to market and is used

# Exercise 2.2

**2.2** Identify the form of intellectual property that would protect:

(a) a new mechanism for a folding pushchair; [1]

(b) the logo of the pushchair company. [1]



(a)




(b)

# Exercise 2.2

**2.2** Identify the form of intellectual property that would protect:

(a) a new mechanism for a folding pushchair; [1]

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(a)




(b)

**2.2**

(a) patent

(b) trademark

# Exercises 2.3·2.4

**2.3** A desk lamp sells for ¥60. Fixed costs are ¥12,000 and the variable cost is ¥20 per lamp. Calculate the break-even number of lamps. [2]



**2.4** Distinguish between **market pull** and **technology push**, with an example of each. [4]



# Exercises 2.3·2.4

**2.3** A desk lamp sells for ¥60. Fixed costs are ¥12,000 and the variable cost is ¥20 per lamp. Calculate the break-even number of lamps. [2]



**2.3**

$12\,000 \div (60 - 20) = \mathbf{300}$ lamps

**2.4** Distinguish between **market pull** and **technology push**, with an example of each. [4]

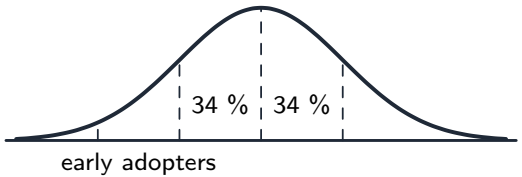



**2.4**

market pull: users' needs drive the new product; e.g. people wanted to carry music, so portable players were made; technology push: a new technology leads to products looking for a use; e.g. lasers, later used in barcode scanners

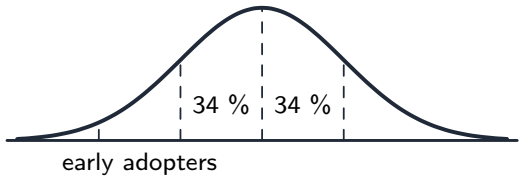
# Exercise 2.5

**2.5** Explain why designers and marketers often target **early adopters** when launching a new product. [3]



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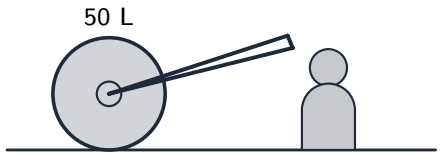

**2.5**

early adopters are respected opinion leaders, about 13.5 % of buyers; others watch them and follow their choices; if they adopt, the early majority (34 %) often follows, so sales grow quickly

# Exercise 3.1 (a)

**3.1** A design team has developed a rolling water container for villages where people carry water a long way by hand. It holds 50 litres and is pushed with a handle.

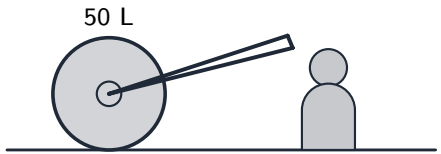
(a) Outline **two** features that make this an example of appropriate technology. [4]



# Exercise 3.1 (a)

**3.1** A design team has developed a rolling water container for villages where people carry water a long way by hand. It holds 50 litres and is pushed with a handle.

(a) Outline **two** features that make this an example of appropriate technology. [4]




(a) any two, outlined: affordable for families with low incomes; simple, so it can be repaired with local skills and tools; needs no fuel or electricity; made from tough local or easy-to-get materials, e.g. polyethylene

# Exercise 3.1 (b)

**3.1** A design team has developed a rolling water container for villages where people carry water a long way by hand. It holds 50 litres and is pushed with a handle.

(b) The team could patent the design or share it as open source. Explain **one** advantage and **one** disadvantage of a patent. [4]

# Exercise 3.1 (b)

**3.1** A design team has developed a rolling water container for villages where people carry water a long way by hand. It holds 50 litres and is pushed with a handle.

(b) The team could patent the design or share it as open source. Explain **one** advantage and **one** disadvantage of a patent. [4]

(b) advantage: protects the invention for about 20 years, so the team can earn money / license it to pay for development; disadvantage: applying is costly and makes the design public; other makers cannot freely make cheap copies, so fewer people may get it

# Exercise 3.2 (a)

**3.2** The sales of a smart speaker are shown.

(a) Identify the stages labelled **A** and **C**. [2]

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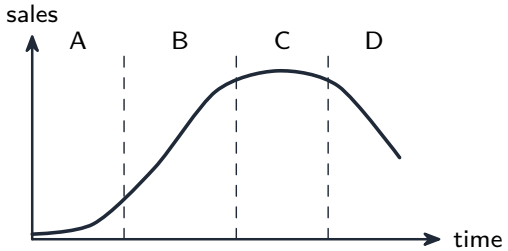
(a) Identify the stages labelled **A** and **C**. [2]

(a) A: introduction; C: maturity

# Exercise 3.2 (b)

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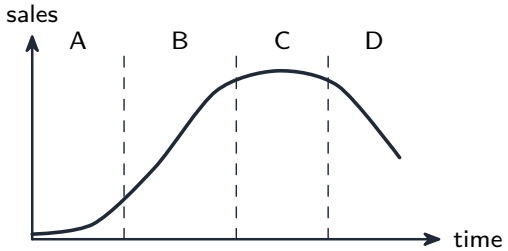
(b) Explain **two** extension strategies the firm could use at stage C. [4]



# Exercise 3.2 (b)

**3.2** The sales of a smart speaker are shown.

(b) Explain **two** extension strategies the firm could use at stage C. [4]




(b) any two, explained: a new model with new features, e.g. a screen, to win back buyers; new colours or a lower price to reach new buyers; new markets, e.g. other countries or business users

# Exercise 3.2 (c)

**3.2** The sales of a smart speaker are shown.

(c) Explain how disruptive innovation differs from incremental innovation, with an example. [3]

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**3.2** The sales of a smart speaker are shown.

(c) Explain how disruptive innovation differs from incremental innovation, with an example. [3]

(c) incremental innovation makes small improvements to an existing product; disruptive innovation starts with overlooked low-end or new users and then moves into the mainstream, replacing existing products; e.g. steel mini-mills made cheap reinforcing bars, then moved into higher-value steel