



F03-test Risk (Foundation): Test Pack

EDEXCEL 1ST0 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

1 A doctor tells a patient that the risk of a particular side effect from a new medicine is 1 in 25.

(a) Explain what is meant by a risk of 1 in 25 for this side effect. **(1)**

(b) Write the risk of 1 in 25 as a fraction. **(1)**

(c) Write the risk of 1 in 25 as a decimal. **(1)**

(d) Write the risk of 1 in 25 as a percentage. **(1)**

(Total for Question 1 is 4 marks)

2 A weather forecaster says, "The risk of rain tomorrow is 1 in 4." Which of these is the best interpretation of this statement?

- ☐ A) It will definitely rain tomorrow.
- ☐ B) On average, it rains on 1 day out of every 4 similar days.
- ☐ C) It will rain for 1 out of the next 4 hours.
- ☐ D) It will not rain tomorrow.

(Total for Question 2 is 1 mark)

3 For each statement about risk, write down whether it is True or False.

(a) A risk of 1 in 10 means that, on average, 1 out of every 10 people (or trials) will experience the event. **(1)**

(b) A risk of 1 in 1000 is a greater risk than a risk of 1 in 10. **(1)**

(c) A risk can be written as a fraction, a decimal or a percentage. **(1)**

(Total for Question 3 is 3 marks)

4 A survey finds that the risk of a household having a smart doorbell is 18%. Out of 250 households, work out the expected number with a smart doorbell.

(Total for Question 4 is 2 marks)

5 Two smoke alarms state their risk of failing over 10 years:

Alarm A: risk of failure = 1 in 40

Alarm B: risk of failure = 1 in 25

(a) Convert both risks to percentages. **(2)**

(b) State which alarm has the greater risk of failure. **(1)**

(Total for Question 5 is 3 marks)

- 6** A vet records the risk of common health issues in a particular breed of dog, shown in the table.

Health issue	Risk
Hip problems	1 in 8
Skin allergy	1 in 5
Eye condition	1 in 20

- (a) Write the risk of skin allergy as a percentage. (1)

.....

- (b) Write down which health issue has the greatest risk. (1)

.....

- (c) A dog breeder has 160 puppies of this breed. Estimate how many would be expected to develop an eye condition. (2)

.....

(Total for Question 6 is 4 marks)

7 A student wants to investigate the statement: "Older drivers have a lower risk of being involved in a car accident than younger drivers."

(a) Plan: Write a suitable question the student could use to plan this investigation. **(1)**

(b) Collect: Suggest one source of secondary data the student could use to collect data on accident rates by age group. **(1)**

(c) Process: The student finds that, in one year, 1 in 25 drivers aged 17 to 25 was involved in an accident, compared with 1 in 200 drivers aged over 50. Work out how many times more likely a driver aged 17 to 25 is to be involved in an accident than a driver aged over 50. **(2)**

(d) Interpret: Write a conclusion the student could make, interpreting this result in the context of the original statement. **(1)**

(Total for Question 7 is 5 marks)

8 A trial gives a new painkiller to 4000 patients and a placebo to a separate 4000 patients. 120 of the patients taking the painkiller reported dizziness, compared with 40 of the patients taking the placebo. Work out the risk of dizziness, as a percentage, for each group, work out the extra risk of dizziness caused by the painkiller, and comment on whether this extra risk seems large enough to be a concern.

(Total for Question 8 is 4 marks)

Mark scheme · F03-test Risk (Foundation): Test Pack

Question 1

- (a) **B1** correct explanation, e.g. on average 1 out of every 25 patients (who take the medicine) will experience the side effect, oe
- (a) **Answer: On average, 1 out of every 25 patients who take the medicine will experience the side effect.**
- (b) **B1** 1/25 cao
- (b) **Answer: 1/25**
- (c) **B1** 0.04 cao
- (c) **Answer: 0.04**
- (d) **B1** 4% cao
- (d) **Answer: 4%**

Question 2

- **B1** B cao
- **Answer: B) On average, it rains on 1 day out of every 4 similar days.**

Question 3

- (a) **B1** True cao
- (a) **Answer: True**
- (b) **B1** False cao
- (b) **Answer: False**
- (c) **B1** True cao
- (c) **Answer: True**

Question 4

- **M1** 250×0.18 oe
- **A1** 45 cao
- **Answer: 45**

Question 5

- (a) **M1** 1/40 and 1/25 converted, oe (method shown for at least one)
- (a) **A1** 2.5% and 4% cao (both correct)
- (a) **Answer: Alarm A = 2.5%, Alarm B = 4%**
- (b) **B1** Alarm B ft (from correct or consistent percentages in part a)
- (b) **Answer: Alarm B**

Question 6

- (a) **B1** 20% cao
- (a) **Answer: 20%**
- (b) **B1** Skin allergy cao
- (b) **Answer: Skin allergy**
- (c) **M1** 160 divided by 20, oe
- (c) **A1** 8 cao
- (c) **Answer: 8**

Question 7

- (a) **B1** any suitable comparative question linking driver age and accident risk, e.g. 'Do drivers aged over 50 have a lower risk of being involved in an accident than drivers aged 17 to 25?', oe
- (a) **Answer: e.g. Do drivers aged over 50 have a lower risk of being involved in an accident than drivers aged 17 to 25?**
- (b) **B1** any suitable named or described source, e.g. GOV.UK road casualty statistics, an insurance company's claims data, or DVLA/police records, oe
- (b) **Answer: e.g. GOV.UK road casualty statistics**
- (c) **M1** 200 divided by 25, oe
- (c) **A1** 8 (times) cao
- (c) **Answer: 8 times**
- (d) **B1** conclusion consistent with the 8-times figure supporting the original statement, e.g. 'This supports the statement: drivers aged 17-25 have a much higher (8 times higher) risk of an accident than drivers aged over 50', oe
- (d) **Answer: e.g. This supports the statement: younger drivers (17-25) have a much higher risk (8 times higher) of being involved in an accident than drivers aged over 50.**

Question 8

- **M1** $120/4000 = 3\%$ oe
- **M1** $40/4000 = 1\%$ oe
- **A1** 2% cao
- **B1** sensible comment, e.g. the risk of dizziness triples on the painkiller compared with the placebo, so this extra risk is likely to be a genuine concern worth investigating oe
- **Answer: Painkiller risk = 3%, placebo risk = 1%; the extra risk of dizziness caused by the painkiller is 2%, and the risk triples compared with the placebo, so it is likely to be considered a genuine concern.**