



H17-30min Comparative and Proportional Pie Charts: 30-minute Pack

EDEXCEL 1ST0 · Calculator allowed · about 30 minutes

Total Marks

Name: _____ Date: ____ / ____ / ____

Answer ALL questions. Show all your working.

- 1** In a survey, Village A had 60 respondents and its results are shown on a pie chart of radius 3.5 cm. Village B, in the same survey, had 140 respondents. Work out the radius that should be used for Village B's pie chart, giving your answer correct to 1 decimal place.

(Total for Question 1 is 3 marks)

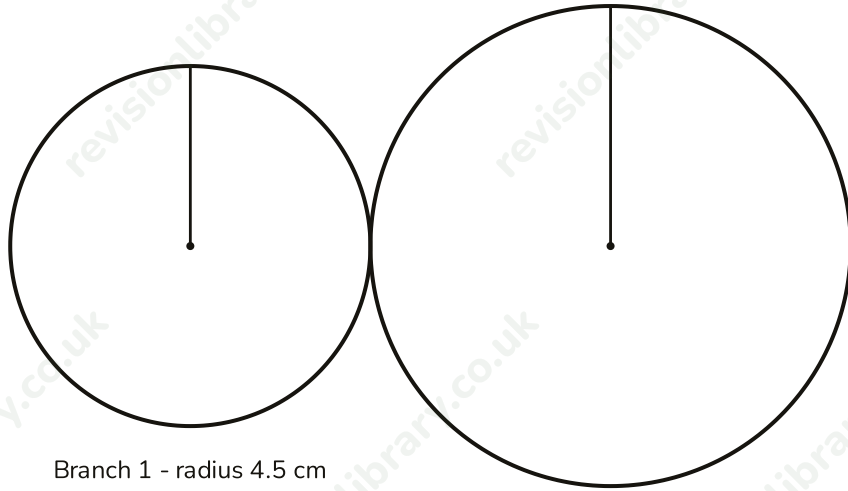
- 2** A cinema compares ticket sales for two screens on the same evening. Screen 1 sold tickets to 80 people and its pie chart is drawn with radius 4 cm. Screen 2 sold tickets to 245 people. Work out the radius that should be used for Screen 2's pie chart.

(Total for Question 2 is 3 marks)

- 3** Two branches of a bakery record the type of loaf sold one morning.

Branch	White	Wholemeal	Sourdough
Branch 1 (total 72 loaves)	30	24	18
Branch 2 (total 128 loaves)	40	56	32

- (a) Work out the sector angles for Branch 1's pie chart (White, Wholemeal, Sourdough). (3)
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- (b) Branch 1's pie chart is drawn with radius 4.5 cm. Work out the radius that should be used for Branch 2's pie chart. (3)
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- (c) Work out the sector angles for Branch 2's pie chart (White, Wholemeal, Sourdough). (3)
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- (d) On the grid provided, draw comparative pie charts for Branch 1 and Branch 2, using your answers to parts (a) to (c). Label each sector. (3)



Branch 1 - radius 4.5 cm

Branch 2 - radius 6 cm

(Total for Question 3 is 12 marks)

4 A student wants to investigate whether the way pupils travel to school differs between Year 7 and Year 9 at her school. She plans to survey a sample of pupils from each year group and display the results using comparative pie charts.

(a) Write down two features the student's survey should include so that the comparison between Year 7 and Year 9 is fair and the results are reliable. (2)

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(b) 50 pupils in Year 7 were surveyed: Walk 20, Bus 15, Car 10, Cycle 5. Work out the sector angles for Year 7's pie chart. (4)

.....
(c) Year 9 has 98 pupils. Year 7's pie chart is drawn with radius 4 cm. Work out the radius that should be used for Year 9's pie chart. (3)

.....
(d) In Year 9, 28 pupils walk to school. Determine whether the proportion of pupils who walk to school is higher, lower, or the same in Year 9 compared with Year 7. Show your working. (3)

(Total for Question 4 is 12 marks)

Mark scheme · H17-30min Comparative and Proportional Pie Charts: 30-minute Pack

Question 1

- **M1** $140/60$, oe (finds the ratio of totals)
- **M1** $\sqrt{\text{their ratio}}$, dependent on the first mark
- **A1** 5.3 (cm), awrt cao
- **Answer: 5.3 cm**

Question 2

- **M1** $245/80$, oe (= 3.0625)
- **M1** $\sqrt{3.0625}$, dependent on the first mark
- **A1** 7 (cm) cao
- **Answer: 7 cm**

Question 3

- (a) **B1** White: 150 degrees
- (a) **B1** Wholemeal: 120 degrees
- (a) **B1** Sourdough: 90 degrees
- **(a) Answer: White 150 degrees, Wholemeal 120 degrees, Sourdough 90 degrees**
- (b) **M1** $128/72$, oe (= 16/9)
- (b) **M1** $\sqrt{16/9}$, dependent on the first mark (= 4/3)
- (b) **A1** 6 (cm) cao
- **(b) Answer: 6 cm**
- (c) **B1** White: 112.5 degrees
- (c) **B1** Wholemeal: 157.5 degrees
- (c) **B1** Sourdough: 90 degrees
- **(c) Answer: White 112.5 degrees, Wholemeal 157.5 degrees, Sourdough 90 degrees**
- (d) **B1** Branch 1 pie chart drawn with radius 4.5 cm and sectors at 150, 120 and 90 degrees (± 2 degrees)
- (d) **B1** Branch 2 pie chart drawn with radius 6 cm and sectors at 112.5, 157.5 and 90 degrees (± 2 degrees)
- (d) **B1** both pie charts fully labelled with categories and a title/key so the branches can be compared
- **(d) Answer: Two pie charts: Branch 1 (radius 4.5 cm, sectors 150 deg / 120 deg / 90 deg) and Branch 2 (radius 6 cm, sectors 112.5 deg / 157.5 deg / 90 deg).**

Question 4

- (a) **B1** asks pupils in both year groups the same closed question, with the same fixed list of travel-method categories, oe
- (a) **B1** surveys a large enough, randomly chosen sample from each year group (not just one class), so the results are representative, oe
- **(a) Answer: Use the same closed question/categories for both year groups, and survey a large, representative sample from each.**
- (b) **B1** Walk: 144 degrees
- (b) **B1** Bus: 108 degrees
- (b) **B1** Car: 72 degrees
- (b) **B1** Cycle: 36 degrees
- **(b) Answer: Walk 144 degrees, Bus 108 degrees, Car 72 degrees, Cycle 36 degrees**
- (c) **M1** $98/50$, oe (= 1.96)
- (c) **M1** $\sqrt{1.96}$, dependent on the first mark
- (c) **A1** 5.6 (cm) cao
- **(c) Answer: 5.6 cm**
- (d) **M1** $20/50 \times 100$, oe (= 40%, Year 7)
- (d) **M1** $28/98 \times 100$, oe (awrt 28.6%, Year 9)
- (d) **A1** 'lower', with correct comparison (28.6% compared with 40%) cao
- **(d) Answer: Lower (about 28.6% in Year 9 compared with 40% in Year 7)**