2.17 Pie Charts: Test Pack

EDEXCEL 1MA1 · Calculator allowed · about 60 minutes

Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 48 people at a cafe were asked whether they prefer tea or coffee. The pie chart shows the results.



(a) What fraction of the pie chart represents people who prefer Tea? **(1)**

.....

(b) 48 people were asked in total. Work out how many people prefer Tea. **(2)**

.....

(Total for Question 1 is 3 marks)

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2 60 shoppers at a Saturday farmers market were asked whether they bought fruit or vegetables. In the pie chart of the results, three quarters of the circle represents Fruit and one quarter represents Vegetables.

(a) Write down the fraction of the pie chart that represents Vegetables. **(1)**

.....

(b) Work out the number of shoppers who bought vegetables. **(2)**

.....

(Total for Question 2 is 3 marks)

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3 In a pie chart, a sector for 'Sports' has angle 90 degrees. What fraction of the whole does this represent? Give your answer as a fraction in simplest form.

(Total for Question 3 is 1 mark)

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4 A survey of 40 people gave these frequencies: 12, 6, 5, 17 for four types of film. Work out the angles for all four sectors of a pie chart and check that they add up to 360 degrees.

(Total for Question 4 is 4 marks)

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5 30 students were asked how they travel to school. Results: Walk 4, Bus 6, Car 5, Cycle 15. Work out the angle for Cycle on a pie chart.

(Total for Question 5 is 2 marks)

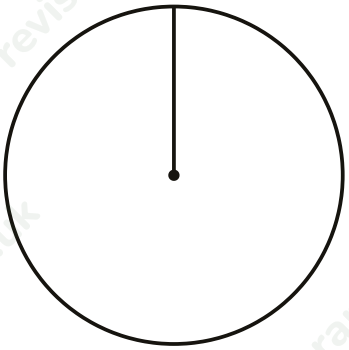
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6 A class of 30 pupils were asked what type of pet they own. The table shows the results.

Pets owned (30 pupils)

Pet	Frequency
Dog	12
Cat	9
Rabbit	3
None	6

Pie chart



(a) Calculate the angle needed to represent each type of pet on a pie chart. **(2)**

.....

(b) Using a protractor, draw an accurate pie chart to show this information. Label each sector. **(2)**

(Total for Question 6 is 4 marks)

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7 In a pie chart showing pupils' favourite school subject, the sector for Art has an angle of 50 degrees. The total number of pupils surveyed is 108. Work out the number of pupils who chose Art.

(Total for Question 7 is 2 marks)

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8 150 shoppers at a supermarket were asked which type of milk they bought most often. The table shows the results: Whole 30, Semi-skimmed 90, Oat 30.

(a) Work out the angle that should be used to represent Semi-skimmed on a pie chart. **(2)**

.....

(b) Work out the angle that should be used to represent Oat on a pie chart. **(2)**

.....

(c) Use your answers to parts (a) and (b), or otherwise, work out the angle that should be used to represent Whole on a pie chart. **(2)**

.....

(Total for Question 8 is 6 marks)

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9 A pie chart shows the results of a survey of 250 people about their preferred type of holiday, given as percentages: Beach 44%, City break 28%, Countryside 18%, Other 10%.

(a) Work out the number of people who chose Beach. **(2)**

.....

(b) Work out the number of people who chose Other. **(2)**

.....

(Total for Question 9 is 4 marks)

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10 108 people voted for their favourite biscuit: Digestive, Custard Cream or Bourbon. In a pie chart of the results, the angles for Digestive, Custard Cream and Bourbon are in the ratio 5:4:3.

(a) Work out the angle that represents each biscuit. **(2)**

.....

(b) Work out the number of people who voted for Bourbon. **(2)**

.....

(Total for Question 10 is 4 marks)

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11 A pie chart shows results from a survey of 150 diners at a restaurant about their starter choices. 25 diners chose Soup. Show that the angle for the Soup sector is 60 degrees. Give the full method.

(Total for Question 11 is 3 marks)

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12 A student was asked to find the angle for a sector representing 18 people out of a survey of 60 people. Their working was:

18/60 = 0.3

0.3 x 100 = 30 degrees

The student's answer of 30 degrees is wrong. Identify the error in the student's method and work out the correct angle.

(Total for Question 12 is 3 marks)

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13 Stretch question. Kwame recorded how he spent a complete 24-hour day in a pie chart. The Sleep sector has an angle of 120 degrees. The Study sector has an angle of 45 degrees. The Exercise sector represents exactly 2 hours. The remaining time is Leisure. Work out the angle of the Leisure sector, then work out how many hours Kwame spent on Leisure. Show your working.

(Total for Question 13 is 6 marks)

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Mark scheme · 2.17 Pie Charts: Test Pack

Question 1

(a) 1/2 oe (0.5, 50%) **B1**

(a) Answer: 1/2

(b) 48 / 2 oe **M1**

(b) 24 cao **A1**

(b) Answer: 24

Question 2

(a) 1/4 oe (0.25, 25%) **B1**

(a) Answer: 1/4

(b) 60 / 4 oe **M1**

(b) 15 cao **A1**

(b) Answer: 15

Question 3

1/4 cao **B1**

Answer: 1/4 (90/360 = 1/4).

Question 4

360 / 40 = 9 **M1**

at least two angles correct **A1**

108, 54, 45, 153 cao **A1**

total 360 shown **B1**

Answer: 108, 54, 45, 153 degrees

Question 5

360 / 30 or 15/30 x 360 **M1**

180 degrees cao **A1**

Answer: 180 degrees

Question 6

(a) at least one correct method shown, e.g. 12/30 x 360 **M1**

(a) all four angles correct: Dog 144, Cat 108, Rabbit 36, None 72 **A1**

(a) Answer: Dog 144 degrees, Cat 108 degrees, Rabbit 36 degrees, None 72 degrees

(b) ft all four sectors drawn with angles matching candidate's answer to (a), within ± 2 degrees **B1**

(b) all four sectors correctly labelled with pet type **B1**

(b) Answer: Pie chart with sectors of 144, 108, 36 and 72 degrees, labelled Dog, Cat, Rabbit and None.

Question 7

50/360 x 108 oe **M1**

15 cao **A1**

Answer: 15

Question 8

(a) 90/150 x 360 oe **M1**

(a) 216 (degrees) cao **A1**

(a) Answer: 216 degrees

(b) 30/150 x 360 oe **M1**

(b) 72 (degrees) cao **A1**

(b) Answer: 72 degrees

(c) 360 - 216 - 72 oe, or 30/150 x 360 oe **M1**

(c) 72 (degrees) cao **A1**

(c) Answer: 72 degrees

Question 9

(a) 0.44 x 250 oe **M1**

(a) 110 cao **A1**

(a) Answer: 110

(b) 0.1 x 250 oe **M1**

(b) 25 cao **A1**

(b) Answer: 25

Question 10

(a) 360 / 12 oe (finding the value of 1 share) **M1**

(a) Digestive 150, Custard Cream 120, Bourbon 90, all correct **A1**

(a) Answer: Digestive 150 degrees, Custard Cream 120 degrees, Bourbon 90 degrees

(b) 3/12 x 108 oe, or 90/360 x 108 oe (ft their answer to (a)) **M1**

(b) 27 cao **A1**

(b) Answer: 27

Question 11

use method: 25/150 x 360 or equivalent **M1**

calculate 25/150 x 360 = 60 oe **M1**

60 cso **A1**

Answer: 60 degrees (25/150 x 360 = 1/6 x 360 = 60).

Question 12

identifies the error: the student multiplied by 100 (found a percentage) instead of multiplying by 360 oe **B1**

correct method: 18/60 x 360 oe **M1**

108 degrees cao **A1**

Answer: The student found the percentage (30%) instead of the angle. Correct angle: 108 degrees (18/60 x 360 = 108).

Question 13

convert 24 hours to 360 degrees: 1 hour = 15 degrees oe **M1**

convert Exercise to degrees: 2 x 15 = 30 degrees oe **M1**

find total of known angles: 120 + 45 + 30 = 195 degrees **M1**

find Leisure angle: 360 - 195 = 165 degrees **M1**

165 degrees cao **A1**

convert to hours and state in context: 165/360 x 24 = 11, so Kwame spent 11 hours on Leisure **C1**

Answer: 165 degrees, which is 11 hours (Sleep + Study + Exercise = 120 + 45 + 30 = 195 degrees; Leisure = 360 - 195 = 165 degrees; 165/360 x 24 = 11 hours).

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