Grade 9 Mathematics Worksheet

Data handling

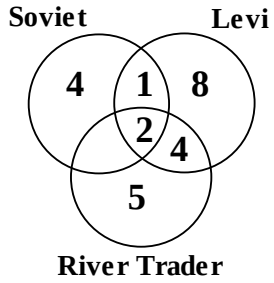
Questions:

1. Leonard conducted a survey in his homeroom class which consists of 24 learners. He wanted to know which denim brand is favoured by his class mates. Some learners chose more than one option. His tally table is as follows:

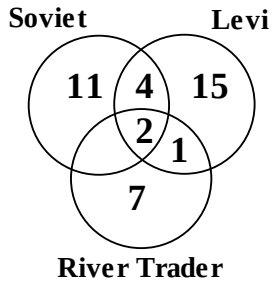
Brand	Tally
Levi Jeans	𝍸 𝍸 𝍸
Soviet Jeans	𝍸 𝍸 I
River Trader	𝍸 II

Leonard drew up a Venn diagram recording the results. Which one is correct?

A)



B)



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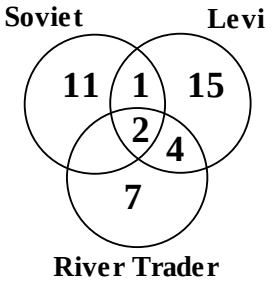
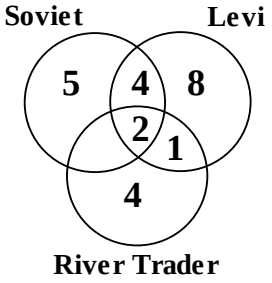
C)



D)



2. The pie chart shows the choice of sports by a group of 300 male learners. Some learners chose more than one sport.

   When drawing the pie chart we make use of angles to represent the different categories according to their size.

   What is the difference between the angles of the category Rugby, and that of Gymnastics?

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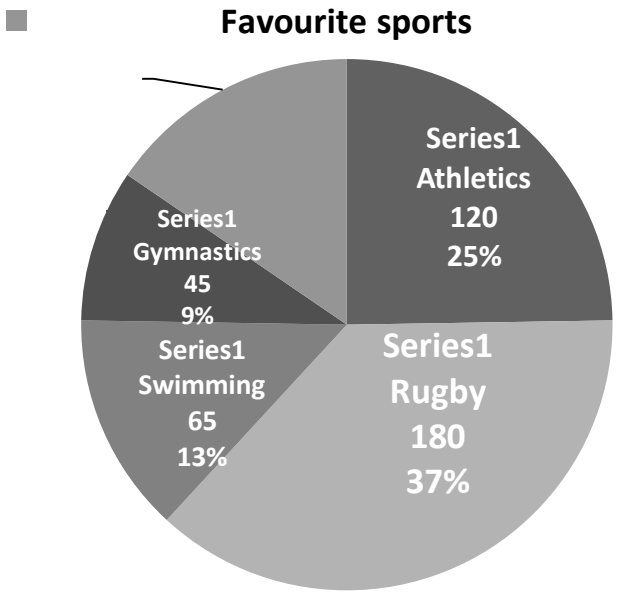

A) 78°
B) 85°
C) 135°
D) 100°

3. South Africa loses a lot of people in road accidents. The data in this question was found on the website www.arrivealive.com. These are statistics that were made available in March 2008.

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In 2007 there were 15 172 vehicles involved in fatal crashes. The spread across the nine provinces was as follows:

Province	Number of fatal accidents
Eastern Cape	1596
Free State	1042
Gauteng	3657
Kwazulu-Natal	2404
Limpopo	1418
Mpumalanga	1694
North West	1303
Northern Cape	369
Western Cape	1691

a) Draw a bar graph to represent the facts.

b) Which province has the highest number of fatal accidents?

c) The following table gives the number of registered vehicles in the different provinces in March 2008.

Province	Number registered vehicles
Eastern Cape	629 573
Free State	518 545
Gauteng	3 531 181
Kwazulu-Natal	1 269 715
Limpopo	426 618
Mpumalanga	552 846
North West	519 401
Northern Cape	202 870
Western Cape	1531 928

Calculate the percentage, per province, of the fatal accidents per registered vehicle. Round your answer off to two decimal places.

d) Plot the information of question (c) on a bar graph.

e) Which of the two bar graphs is a more fair representation of the data?

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f) The following table gives the size, in square kilometres of the different provinces.

Province	**Area in square kilometres**
Eastern Cape	168 966
Free State	129 825
Gauteng	16 548
Kwazulu-Natal	94 361
Limpopo	125 755
Mpumalanga	76 495
North West	106 512
Northern Cape	106 512
Western Cape	129 462

Calculate the percentage, per province, of fatal accidents per square kilometre.

g) Plot the information of question (f) on a bar graph.

h) Which of the **three** bar graphs will you use when you are talking to a group of learners on the topic of fatal car accidents? Explain.

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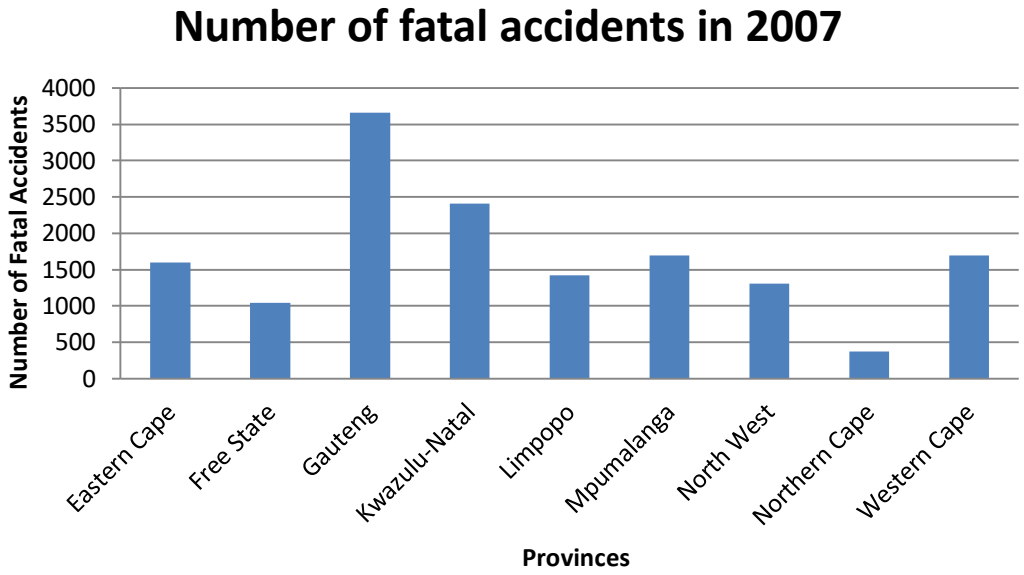
Solution:

1. D is the correct solution because the total number in each circle tallies with the numbers in the tally table.

2. There are a total of 120 + 180 + 65 + 45 + 75 = 484 choices.
   Rugby = $\frac{180}{484} \times 360° = 134°$
   Gymnastics = $\frac{45}{484} \times 360° = 34°$
   The difference is $100°$. So the answer is (D).

3. a)



   b) Gauteng

   c) $\frac{1596}{629576} \times 100 = 0{,}25\%$ FS: $\frac{1042}{518545} \times 100 = 0{,}20\%$
   GP: $\frac{3657}{3531181} \times 100 = 0{,}10\%$ KZN: $\frac{2404}{1269715} \times 100 = 0{,}19\%$
   L: $\frac{1418}{426618} \times 100 = 0{,}33\%$ MP: $\frac{1694}{552846} \times 100 = 0{,}31\%$
   NW: $\frac{1303}{519401} \times 100 = 0{,}25\%$ NC: $\frac{369}{202870} \times 100 = 0{,}18\%$
   WC: $\frac{1691}{1531928} \times 100 = 0{,}11\%$

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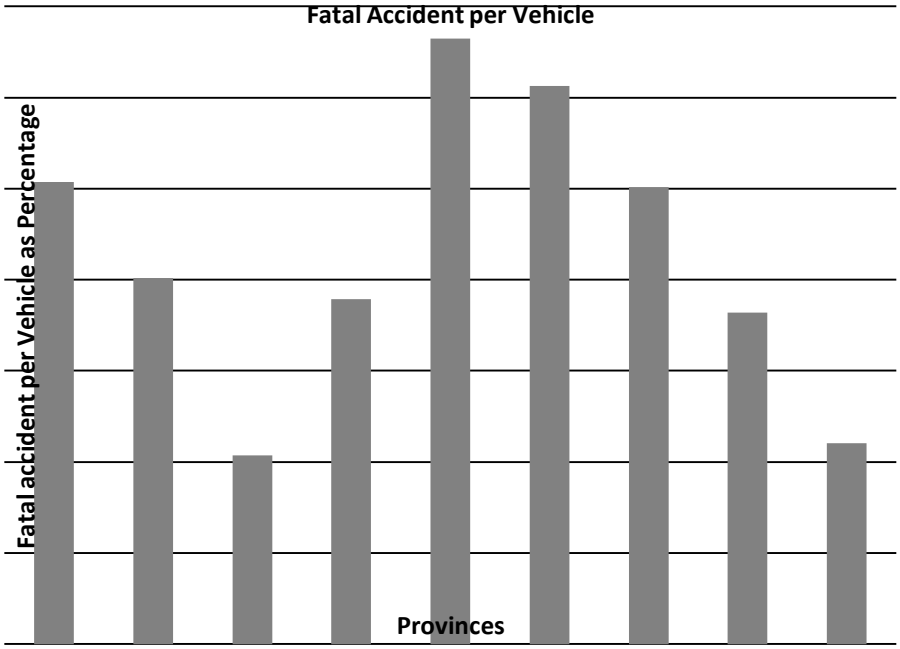
Province	Number of fatal accidents	Number registered vehicles	Fatal accident per registered vehicle
Eastern Cape	1596	629 573	0,25
Free State	1042	518 545	0,20
Gauteng	3657	3 531 181	0,10
Kwazulu-Natal	2404	1 269 715	0,19
Limpopo	1418	426 618	0,33
Mpumalanga	1694	552 846	0,31
North West	1303	519 401	0,25
Northern Cape	369	202 870	0,18
Western Cape	1691	1531 928	0,11

d)



e) The two graphs represent two different pictures of the same situation. To be absolutely fair one should use both graphs. Gauteng has the highest number of fatal accidents, but per registered vehicle Gauteng has the lowest percentage.

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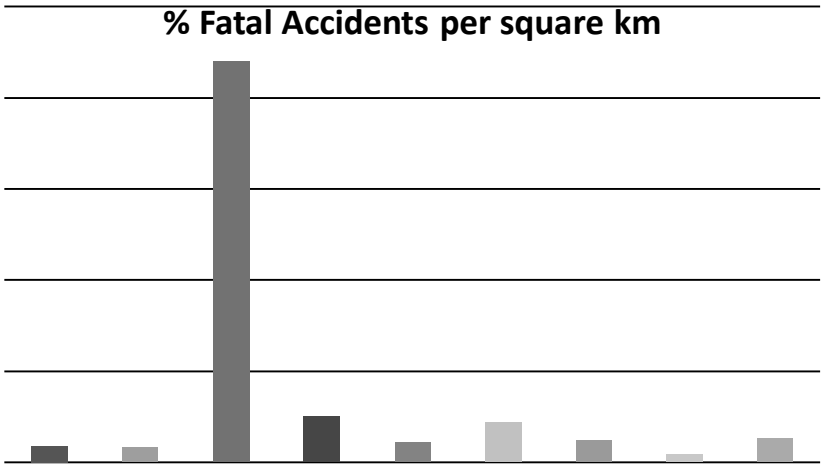
f)

Province	Area in square kilometres	Number of fatal accidents	Fatal accidents per sq km
Eastern Cape	168 966	1596	0,9%
Free State	129 825	1042	0,8%
Gauteng	16 548	3657	22%
Kwazulu-Natal	94 361	2404	2,5%
Limpopo	125 755	1418	1,1%
Mpumalanga	76 495	1694	2,2%
North West	106 512	1303	1,2%
Northern Cape	106 512	369	0,4%
Western Cape	129 462	1691	1,3%

g)



h) In Gauteng I will use the last graph which shows the percentage of fatal accidents per square kilometre. Gauteng has the largest number by far and is the smallest province. For learners in KZN I will use the first graph as it shows that KZN has the second largest number of fatal accidents. For the rest of the provinces I will choose between graph (a) and (b), depending on where their specific province fairs the worst.

Learners are required to link the number of degrees in a revolution to the number that chose the sport, and round these off appropriately so that the sum does not exceed the degrees in a revolution.