WORKSHEET

Two-way tables

1 The table below represents the results of a survey that determined the age of the survey participants and whether or not they were blood donors.

		Blood donor	Non-donor	
Age	16–18 years	8		25
	19–25 years	17	42	
	26–40 years	29		
	41–65 years		33	42
			143	

a How many of the 16–18 year olds did not donate blood?

b How many 26–40 year olds were surveyed?

c How many 41–65 year olds donated blood?

d How many of the participants surveyed were blood donors?

e Convert the two-way table to a percentage two-way table.

f Use the data in the table to construct a segmented column graph.

g Discuss: Is there is an association between the two variables?

2 Each employee of a small business was asked whether they had attained any university qualifications. Four of the 15 people working as secretaries/assistants and five of the eight members of management had attained university qualifications, whereas 21 of the 52 office staff had not.

a Draw a two-way table to represent the data.

b How many of the office staff had attained a university qualification?

c How many people does the small business employ altogether?

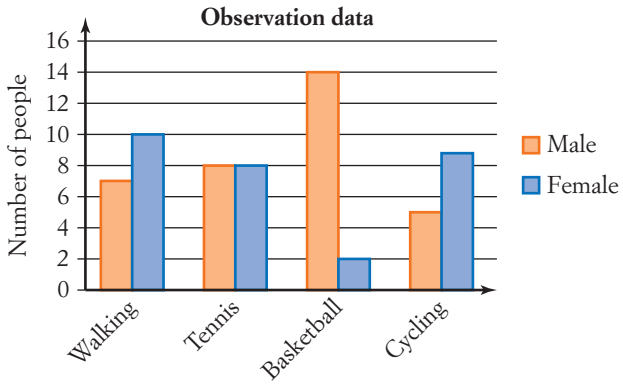
d How many of the employees have a university qualification?

e Convert the two-way table to a percentage two-way table.

f Use the data in the table to construct a segmented column graph.

g Discuss: Is there is an association between the two variables?

3 People in a local park were observed participating in activities as shown in the histogram below.



a Draw a two-way table to represent the data.

b How many people were observed cycling?

c How many males were observed in the park?

d Which activity had the greatest number of participants?

e Convert the two-way table to a percentage two-way table.

f Use the data in the table to construct a segmented column graph.

g Discuss: Is there is an association between the two variables?

Answers

1 a 17

b 80

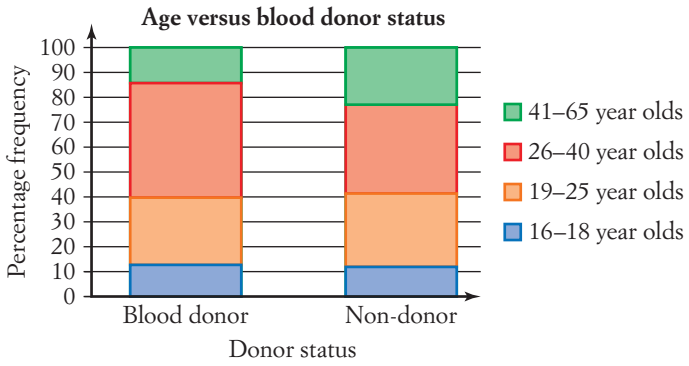
c 9

d 63

e

		Blood donor	Non-donor
Age	16–18 years	12.7%	11.9%
	19–25 years	27.0%	29.4%
	26–40 years	46.0%	35.7%
	41–65 years	14.3%	23.1%
		100%	100%

f



g The column splits are nearly the same for 16–18 year olds and 19–25 year olds, suggesting that for these age groups there is no relationship between age and donor status. As people get older, however, this changes. More 26–40 year olds and fewer 41–65 year olds donate blood. The only conclusion we can draw from this is that blood donations peak in the 26–40 year age group. No overall relationship exists between age and donor status.

2 a

		University qualification	No university qualification	
Employee	Secretary/Assistant	4	11	15
	Management	5	3	8
	Office staff	31	21	52
		40	35	75

b 21

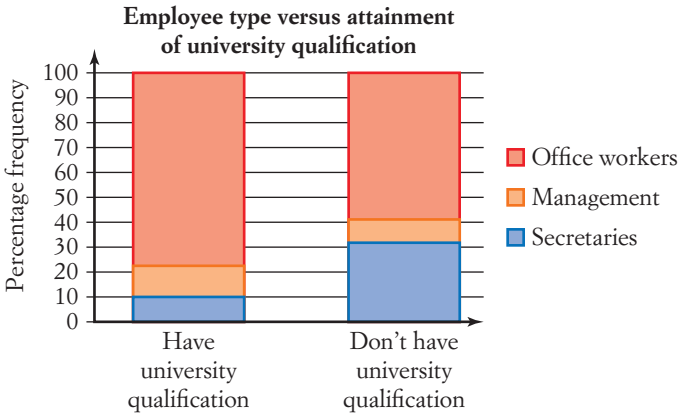
c 75

d 40

e

		University qualification	No university qualification
Employee	Secretary/Assistant	10%	31.4%
	Management	12.5%	8.6%
	Office staff	77.5%	60%
		100%	100%

f



g Yes there appears to be an association between job type and university degree. From the graph, we can see that fewer secretaries have university qualifications, and more office workers and members of mangement have university qualifications.

3 a

		Male	Female	
Activity	Walking	7	10	17
	Tennis	8	8	16
	Basketball	14	2	16
	Cycling	5	9	14
		34	29	63

b 14

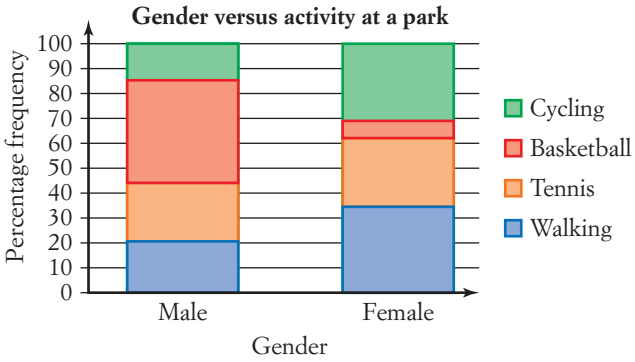
c 34

d Walking

e

		Male	Female
Activity	Walking	20.6%	34.5%
	Tennis	23.5%	27.6%
	Basketball	41.2%	6.9%
	Cycling	14.7%	31.0%
		100%	100%

f



g The graph shows that there is an association between the two variables. At this park, gender has an impact on the type of physical activity a person is involved in. Females are more likely to be involved in walking and cycling, whereas males are much more likely than females to be involved in basketball. The only recorded activity not influenced by gender is tennis.