

N5 Applications Extended Practice Test 3

1. John bought an antique watch for £1500. Over the next two years it increased in value at the rate of 12% per annum.



Unfortunately at the end of that second year John dropped the watch and it sustained some damage which resulted in the watch losing 21% of its value.

Was the watch worth more or less now, after it was damaged, than it was worth when John first bought it?

You must show all working.

2. The number of shoppers passing through the door of a large department store during the month of October was 125 000.



In November the number of shoppers increased to 167 500.

If the same percentage increase in shoppers was expected from November to December as occurred from October to November, how many shoppers could the store expect to see through their doors in December?

3. **Thermogreen Ltd** are developing a new greenhouse which claims to maintain an average interior temperature of 18°C .



Over a period of time the following temperatures (in degrees Celsius) were recorded:

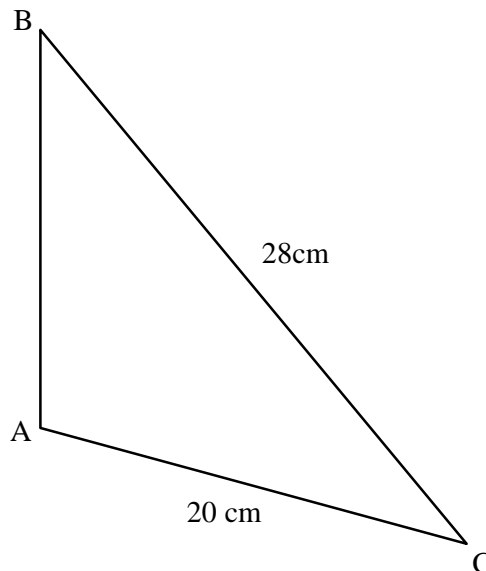
16.8 20.3 17.4 18.2 19.5 17.6 19.1 17.8 16.5 18.8

- (a) Find the mean and standard deviation for the data given.
- (b) Trading Standards expect the mean temperature to be within 0.4°C of the stated temperature and the standard deviation to be less than 1.5°C .

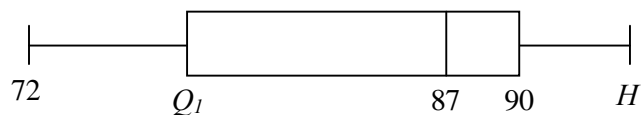
Does Thermogreen's new greenhouse meet the Trading Standards conditions?

4. Triangle ABC is shown opposite

If the triangle has an area of 140 square centimetres, find the size of angle BCA.



5. The box plot shows the number of new workers taken on by a factory over a 20 year period.

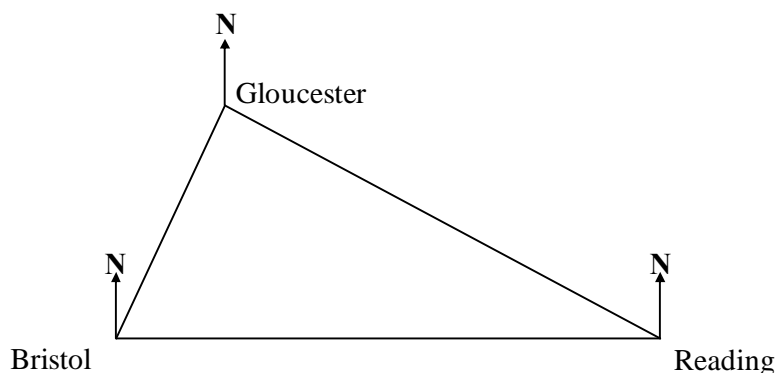


- (a) If the range of new workers is 23, find the value of H .
- (b) Given that the semi-interquartile range is 5.5, find the value of Q_1 .
6. A survey was carried out amongst 400 adults who booked a holiday on-line to find out what type of holiday they had chosen.

The results of the survey are shown in the table below.

Age	Package	Activity	Fly drive	Cruise
40 and under	92	86	18	14
Over 40	45	38	21	86

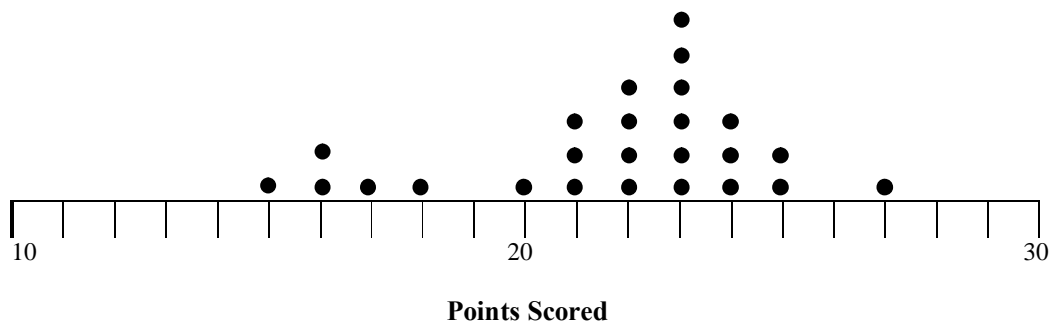
- (a) What is the probability that any adult, chosen at random, would have booked a cruise? **Give your answer in its simplest terms.**
- (b) What is the probability that any adult **over 40**, chosen at random, **would not** have booked a package holiday?
7. Reading is 105 kilometres due east of Bristol. The bearing of Gloucester from Bristol is 024° and from Reading is 300° .



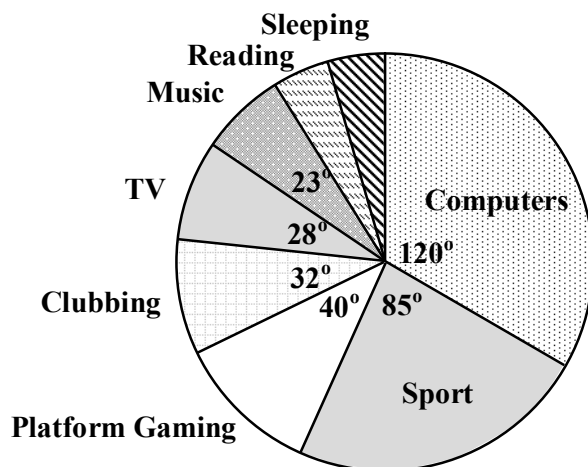
- (a) Draw the triangle and mark the sizes of all the internal angles.
- (b) Calculate the distance between Gloucester and Reading to the nearest kilometre.

8. A rugby team played 25 games one season. They recorded how many points they scored during each game.

The results are shown in the dot plot.



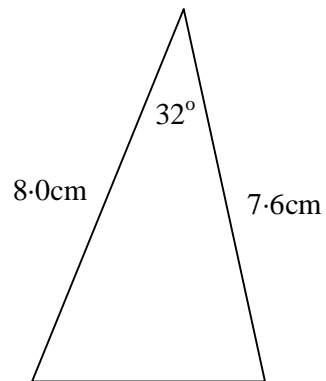
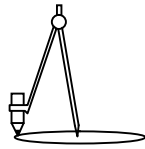
- (a) In what percentage of the games did they score more than 23 points?
- (b) What is the median of the data?
- (c) Is the distribution symmetric, skewed or widely spread ?
9. The pie chart shows the eight most popular pastimes voted for by a group of students.



- (a) Reading and sleeping gained the same number of votes.
What size is the angle for each of them?
- (b) The total number of votes was 846 .
How many votes did Platform Gaming get?
10. Express as a single fraction in its simplest form $\frac{2x}{y^2} \div \frac{4x}{y^3}$

11. A, B and C have coordinates $(-3, 4, 7)$, $(-1, 8, 3)$ and $(0, 10, 1)$ respectively
- (a) Show that A, B and C are collinear.
- (b) Find the coordinates of D such that $\vec{AD} = 4\vec{AB}$.
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12. The pair of compasses shown in the diagram below is used to draw a complete circle.



It is 7.6 centimetres from the top of the compass to the point of the compass needle and 8.0 centimetres from the top to the pencil point.

The angle between the two arms is 32° .

Calculate the **diameter** of the circle being drawn correct to 1 decimal place.

End of question paper