Working with Data

Name _____ Date _____

SHOW ALL YOUR WORKING OUT EVEN IF YOU USE A CALCULATOR.

The table below shows the weather forecast for Week A. Use it to answer questions 1-5, and 7.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Weather							
Temperature	21˚C	20˚C	17˚C	19˚C	24˚C	27˚C	18˚C
Precipitation	15%	25%	40%	70%	20%	5%	86%

1. What is the average temperature for the week rounded to the nearest degree?

2. What is the median temperature for the week?

3. What is the range of these temperatures?

4. The temperature for next week Monday is forecast to be 16˚C.
   Is this temperature within the range of the temperatures above?

5. You would like to have a BBQ during the week (Mon-Fri) with some friends.
   Which two days could be ideal to have your BBQ and why?

The table below shows the weather forecast for Week B. Use it to answer questions 6-7.

Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
Temperature	16˚C	19˚C	22˚C	_____˚C	20˚C	22˚C	18˚C

6. The mean average temperature for predicted as 20˚C. What is the temperature on Thursday?

7. What is the mode for: Week A _____ Week B _____

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SHOW ALL YOUR WORKING OUT EVEN IF YOU USE A CALCULATOR.

The table shows the top five teams in the Premier League (2017). Use it to answer questions 8-12.

		GP	W	D	L	GF	GA	GD	Pts	PPG	CS	FTS
1	Chelsea	38	30	3	5	85	33	+52	**93**	2.45	42%	8%
2	Tottenham	38	26	8	4	86	26	+60	**86**	2.26	45%	13%
3	Manchester City	38	23	9	6	80	39	+41	**78**	2.05	32%	13%
4	Liverpool	38	22	10	6	78	42	+36	**76**	2.00	32%	13%
5	Arsenal	38	23	6	9	77	44	+33	**75**	1.97	34%	11%

Source: http://www.soccerstats.com/latest.asp?league=england

KEY: GP = games played, W = games won, D = draws, L = games lost, GF = goals for, GA = goals against, GD = goal difference, Pts = total points, PPG = points per game, CS = clean sheets (matches with no goal conceded), FTS = failed to score (matches with no goal scored).

8. Each team has played 38 games (GP). Liverpool and Manchester City failed to score (FTS) in 13% of their games. How many games did they fail to score in? Remember to round your answer.

9. Arsenal won 23 games. What percentage of games did they win? Give your answer to the nearest percent.

10. How is the goal difference (GD) calculated? Write a word formula to explain this.

11. How is the PPG calculated? Write a word formula to explain this.

12. Tottenham lost 4 games. What percentage of games is this? Give your answer to 1 decimal place.

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SHOW ALL YOUR WORKING OUT EVEN IF YOU USE A CALCULATOR.

The table below shows some Glastonbury Festival statistics. Use it to answer questions 13-16.

13. Complete the table. The first four values have been entered for you.

Year	Tickets Sold	Ticket Price	Total in £s
1970	1500	£1	£1,500
1981	18000	£8	£144,000
1986	60000	£21	£1,260,000
1993	80000	£58	£4,640,000
1999	100500	£83	
2005	153000	£125	
2011	135000	£195	
2013	135000	£205	
2014	135000	£210	
2015	135000	£225	
2016	135000	£228	
2017	TBC	£238	TBC

Source: https://en.wikipedia.org/wiki/Glastonbury_Festival

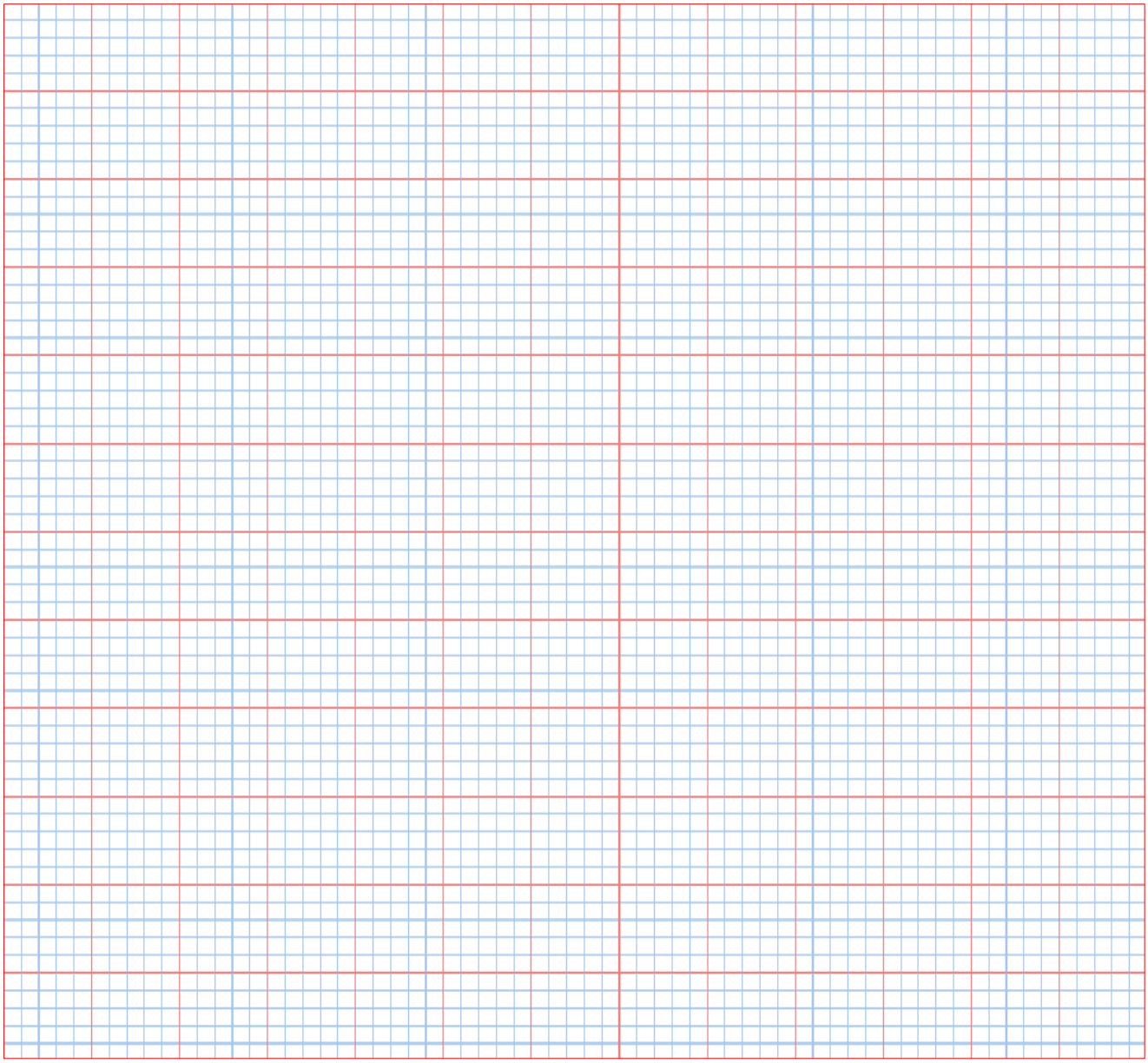
14. What was the percentage increase of the ticket price from 2013 to 2014? Give your answer to one decimal place.

Percentage Increase/decrease:

$$\frac{\text{new price - old price}}{\text{old price}} \times 100$$

15. If festival organisers retain 38% of the profit from ticket sales, how much money did festival organisers make in 2013?

16. Produce an appropriate chart showing **ticket prices** from 2011 to 2017.



17. Write two statements about your graph.

FUNCTIONAL MATHEMATICS **Coverage and Range statements (indicative only)**

Coverage and range statements provide an indication of the type of mathematical content candidates are expected to apply in functional contexts. Relevant content can also be drawn from equivalent National Curriculum levels and the Adult Numeracy standards. ✓ *indicates the main coverage and range skills covered in this resource, although these may vary with the student group and how the resource is used by the teacher.* ***Reference:*** *Ofqual (2009), Functional Skills criteria for Mathematics: Entry 1, Entry 2, Entry 3, level 1 and level 2.*
https://www.gov.uk/government/publications/functional-skills-criteria-for-mathematics

Level 1

a) Understand and use whole numbers and understand negative nos. in practical contexts ✓
b) Add, subtract, multiply and divide whole numbers using a range of strategies ✓
c) Understand and use equivalences between common fractions, decimals and percentages ✓
d) Add and subtract decimals up to 2 decimal places
e) Solve simple problems involving ratio, where one number is a multiple of the other
f) Use simple formulae expressed in words for one- or two-step operations ✓
g) Solve problems requiring calculation, with common measures, including money, time, length, weight, capacity and temperature ✓
h) Convert units of measure in the same system
i) Work out areas and perimeters in practical situations
j) Construct geometric diagrams, models and shapes
k) Extract and interpret information from tables, diagrams, charts and graphs ✓
l) Collect and record discrete data and organise and represent information in different ways
m) Find mean and range ✓
n) Use data to assess the likelihood of an outcome ✓

Level 2

a) understand and use positive and negative numbers of any size in practical contexts ✓
b) carry out calculations with numbers of any size in practical contexts, to a given number of decimal places ✓
c) understand, use and calculate ratio and proportion, including problems involving scale
d) understand and use equivalences between fractions, decimals and percentages ✓
e) understand and use simple formulae and equations involving one or two operations ✓
f) recognise and use 2D representations of 3D objects
g) find area, perimeter and volume of common shapes
h) use, convert and calculate using metric and, where appropriate, imperial measures
i) collect and represent discrete and continuous data, using information and communication technology (ICT) where appropriate ✓
j) use and interpret statistical measures, tables and diagrams, for discrete and continuous data, using ICT where appropriate. ✓
k) use statistical methods to investigate situations ✓
l) use probability to assess the likelihood of an outcome

This resource also covers many **adult numeracy curriculum** elements. http://www.excellencegateway.org.uk/content/etf1075

Working with Data

Answers and curriculum mapping

WEATHER

1. Average = 21+20+17+19+24+27+18/7=20.85 — 21˚C
2. Median: 17, 18, 19, **20**, 21, 24, 27 — 20˚C
3. Range: 27 – 17 = 10 — 10˚C
4. No, 16˚C is not within the range (17˚C-27˚C). — No
5. Monday because it is 21˚C and only has 15% chance of rain.
   Friday because it is 24˚C with only 20% chance of rain.
6. 20 X 7 = 140 – (16+19+22+20+22+18) = 23 — 23 ˚C
7. Week 1: no mode — Week 2: 22˚C

FOOTBALL

8. 0.13 x 38 = 4.94 — 5 games
9. 23/38 x 100 = 60.52 — 61%

*10. GD = GF – GA — **Goal difference** equals **goals for** minus **goals against.**

*11. PPG = Pts ÷ 38 — **Points per game** equals **total points** divided by the **number of games.**

12. 4/38 x 100 = 10.526 — 10.5%

GLASTONBURY

13.

1999	100500 x 83 = £8,341,500		2014	135000 x 210 = £28,350,000
2005	153000 x 125 = £19,125,000		2015	135000 x 225 = £30,375,000
2011	135000 x 195 = £26,325,000		2016	135000 x 228 = £30,780,000
2013	135000 x 205 = £27,675,000			

14. (210-205)/205 x 100 = 2.43 — 2.4%
15. 0.38 x 27,675,000 = 10,516,500 — £10,516,500
16. Accept a line or a bar chart. Deduct marks for missing title, labels, etc.

17. Accept any two suitable statements. For example:

- The graph shows an upward trend with prices increasing each year from 2011.
- The smallest increase was from 2015 to 2016 (£3)
- The largest increase was from 2014 to 2015 (£15)

**Other wordings are acceptable. E.g., 'subtract' instead of 'minus', 'is' instead of 'equals', etc.*