

Teachers guidance - Solutions

| WORKSHEET | OVERVIEW | KS2 SECTION | LINKS TO NC |
|------------------------------|--|------------------------|--|
| Shape and Structure | Students consider different 2D and 3D shapes and basic geometry | Lower (years 3 and 4) | <ul style="list-style-type: none"> • Make 3D shapes • Recognise 3D shapes • Identify right angles • Identify 3D shapes from 2D representations • Compare geometric shapes |
| | | Higher (years 5 and 6) | <ul style="list-style-type: none"> • As above plus: • Identify angles • Employ circle geometry • Find unknown angles (algebraically) |
| Cost of Watching TV | Students conduct a class survey and analyse the results to calculate the cost of the electricity used to watch TV by the class | Lower (years 3 and 4) | <ul style="list-style-type: none"> • Solve number problems using addition and subtraction • Solve number problems using multiplication • Compare time/event duration • Interpret and present data in bar charts and tables • Solve one- and two-step problems using tabulated data |
| | | Higher (years 5 and 6) | <ul style="list-style-type: none"> • Solve contextualised multistep problems involving and deciding which mathematical operations to employ • Use simple formulae • Use of decimals |
| Keeping the lights on | This worksheet asks students to focus on their data analysis skills through consideration of a UK-France energy mix comparison | Lower (years 3 and 4) | <ul style="list-style-type: none"> • Solve number problems using addition and subtraction • Solve number problems using multiplication and division • Interpret data in tables • Interpret data in time graphs (yr 4) and bar charts (yr 3) • Solve one- and two-step problems using tabulated data |
| | | Higher (years 5 and 6) | <ul style="list-style-type: none"> • Solve comparison and sum problems using information represented in a line graph • Solve problems which require knowledge of decimals |

Data Sources

Data employed are representative and have been adapted for educational purposes from:

DECC (2015) <https://www.gov.uk/government/organisations/department-of-energy-climate-change/about/statistics>

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Teachers guidance – Solutions

Shape and Structure

SHAPE AND STRUCTURE

1. Cylinder (A)
2. Sphere (C)
3. Dome (B)

GEODESIC DOME

Higher worksheet

1. 3
2. 3, 5, 6
3. Triangle, pentagon, hexagon
4. 90°
5. 5 m (10 m is the diameter, 5 m is the radius)

Lower worksheet

1. 3
2. 3, 5, 6
3. Triangle, pentagon, hexagon
4. No

You may like to run the practical element as a team based activity and challenge students to build the strongest possible structure with limited resources.

Keeping the Lights On

HIGHER KS2

Table

1. 32%
2. A) Gas B) Nuclear
3. Oil
4. 77% (1 + 44 + 3)
5. True
6. True
7. 8 times
8. 6.5 times

Graph

1. Fossil fuel
2. 250 units
3. Increased
4. Decreased
5. Remained constant
6. Increased
7. Increased – students need to extrapolate and may also incorporate other observations into their answers

YEAR 3

Table

1. 32 units
2. Oil
3. Gas
4. Nuclear
5. A) 77 units B) 9 units
6. True

Graph

1. 10 units
2. Russia
3. UK, Spain
4. 2 (China, Germany)
5. 5 units

YEAR 4

Table

1. 32 units
2. Oil
3. Gas
4. Nuclear
5. A) 77 units B) 9 units
6. True

Graph

1. Fossil fuels
2. Nuclear
3. Increased
4. Decreased
5. Remained constant
6. Increased
7. Increased – students need to extrapolate and may also incorporate other observations into their answers

The Cost of Watching TV Answers to questions depend on survey results

Graph

Suggested AfL (peer/self assessment) criteria:

- Appropriate scales (multiples of 1, 2, 5, 10)
- Scale fits the page
- Bars are not touching
- Axes are labelled
- Units on the axes labels
- Title
- Accurately drawn with sharp pencil

Further questions

(higher KS2 worksheet only)

1. 30 p (= 15×2)
2. 3 p (= 15×0.2 or = $30 \div 10$)
3. 3 p x number of hours watched
4. Answer to Q3 multiplied by 7
5. Answer to Q3 multiplied by 365 or Answer to Q4 multiplied by 52
6. 2 people = £450; 3 people = £600; 4 people = £750; 5 people = £900; 6 people = £1050