

WJEC MATHEMATICS

HIGHER

3 TIER TOPICS

**FRACTIONS AND
PERCENTAGES OF AMOUNTS**

@MrGoreMaths.

Spec 1 – Numeracy – P1

11. (a) In 2009, approximate costs for building 1 mile of road in Wales were published, as given below.

Type of road	Approximate cost per mile
Single carriageway	£8 million
Dual carriageway	£13 million
Motorway	£24 million



A road was built in 2009 that went 10% over the published costs.

This road is 28 miles long, with $\frac{3}{4}$ of its length being a single carriageway and the remainder being a dual carriageway.

- (i) Calculate an estimate of the cost of building the single carriageway.

[3]

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- (ii) Calculate an estimate of the cost of building the remaining dual carriageway.
Circle your answer.

[1]

£10 million

£10⁶

£9 × 10⁷

£1 × 10⁸

£14.3 million

Spec 2 – Numeracy – P2

4. (a) The North Hoyle Offshore Wind Farm is located approximately 7.5 km off the coast of North Wales.

When this wind farm opened, it was working at 35% of its full capacity, and it produced enough annual electricity for 50 000 homes.

For how many homes would the wind farm have been able to produce electricity each year if it had worked at full capacity?

[2]

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- (b) There are many offshore wind farms off the coast of Wales, Scotland and England.

The full power of the individual wind turbines is different in the various wind farms.

The table shows information for 4 wind farms.



Wind farm	Full power of each turbine in Mega Watts (MW)	Number of wind turbines
North Hoyle	2.0	30
Lynn and Inner Dowsing	3.5	54
Rhyl Flats	3.6	25
Robin Rigg	3.0	60

If each of these 4 wind farms worked at 45% of full power, what would be the mean power of a single wind turbine?

Give your answer correct to 2 decimal places.

You must show all your working.

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2. (a)



Lotty and Rafael decide to enter a prize draw.
They agree to share any money they win in the ratio 2 : 3 respectively.
After winning a total of £2000, they think again and decide that Lotty's share should be increased by 30%.

- (i) Rafael thinks that his share will be reduced by 30%.
Without any calculation, explain why Rafael's thinking is incorrect. [1]

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- (ii) Calculate the amount of money Lotty wins after the decision is made to increase her share. [4]

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