

How many times greater

1. The table shows the composition of some of the gases in inhaled and exhaled air.

Gas	Gas composition (%)	
	Inhaled air	Exhaled air
Oxygen	20	16
Carbon dioxide	0.04	4

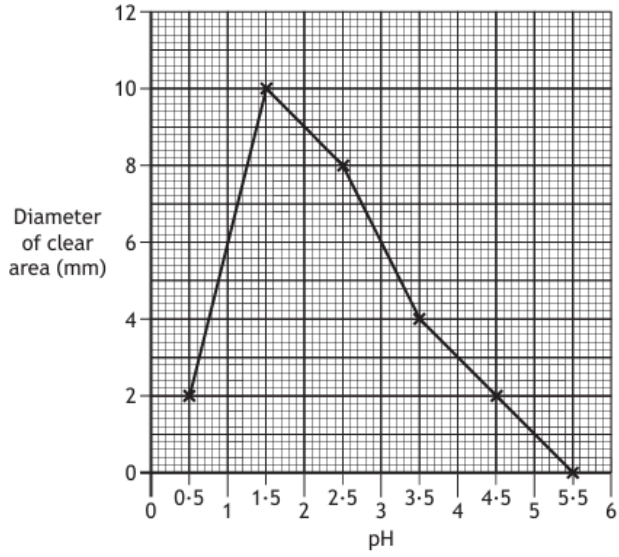
How many times greater is the carbon dioxide concentration in exhaled air than in inhaled air?

- A 0.16
- B 3.96
- C 100
- D 500

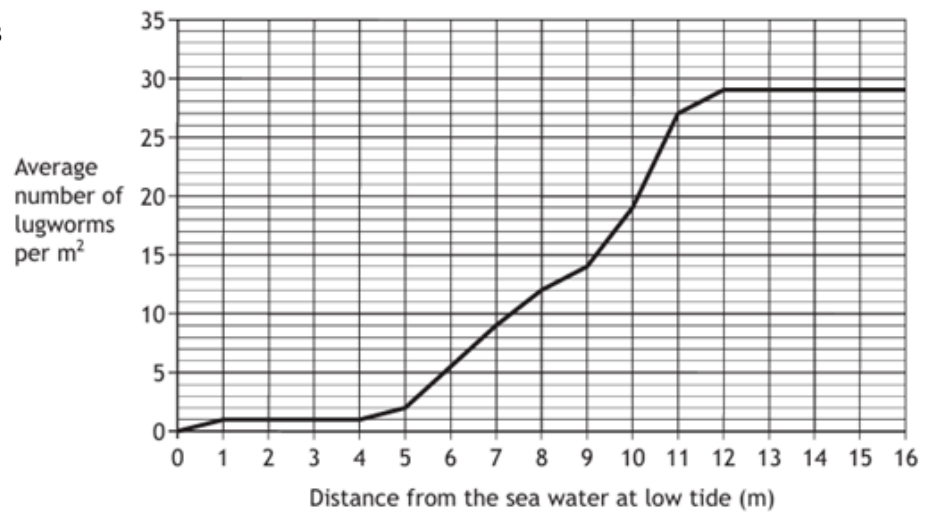
2. Calculate how many times more active the enzyme is at pH 2.5 than at pH 4.5.

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Space for calculation



- 3



Calculate how many times greater the average number of lugworms at 11 metres is compared to 7 metres from the seawater at low tide.

1

Space for calculation

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4. The table shows the concentration of three ions outside and inside a human cell.

Ions	Outside cell (mM)	Inside cell (mM)
Sodium (Na^+)	145	12
Potassium (K^+)	4	139
Chloride (Cl^-)	116	4

Calculate how many times greater the concentration of chloride ions is outside the cell compared to inside the cell.

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5. The table shows different types of cells and their average cell width.

Cell type	Average cell width (μm)
onion epidermis	201
human liver	20
human egg	130
yeast	8
<i>Bacillus</i> bacterium	3

Calculate how many times wider an onion epidermis cell is than a *Bacillus* bacterium cell.

Space for calculation

6. The table shows the results of IVF treatments for women of different ages.

Age of woman (years)	IVF treatments resulting in births (%)
Under 35	32.2
35–37	27.7
38–39	22.0
40–42	14.0
43–44	4.4
45+	1.9

Calculate how many times greater the chance of a 38 year old woman giving birth to a baby is compared to that of a 44 year old woman.

1

Space for calculation

7. The average size of different types of cell are shown in the table.

Cell type	Average size (μm)
Animal	32.0
Bacterial	0.8
Fungal	6.4
Plant	52.0

Calculate how many times bigger the average plant cell is compared to the average bacterial cell.

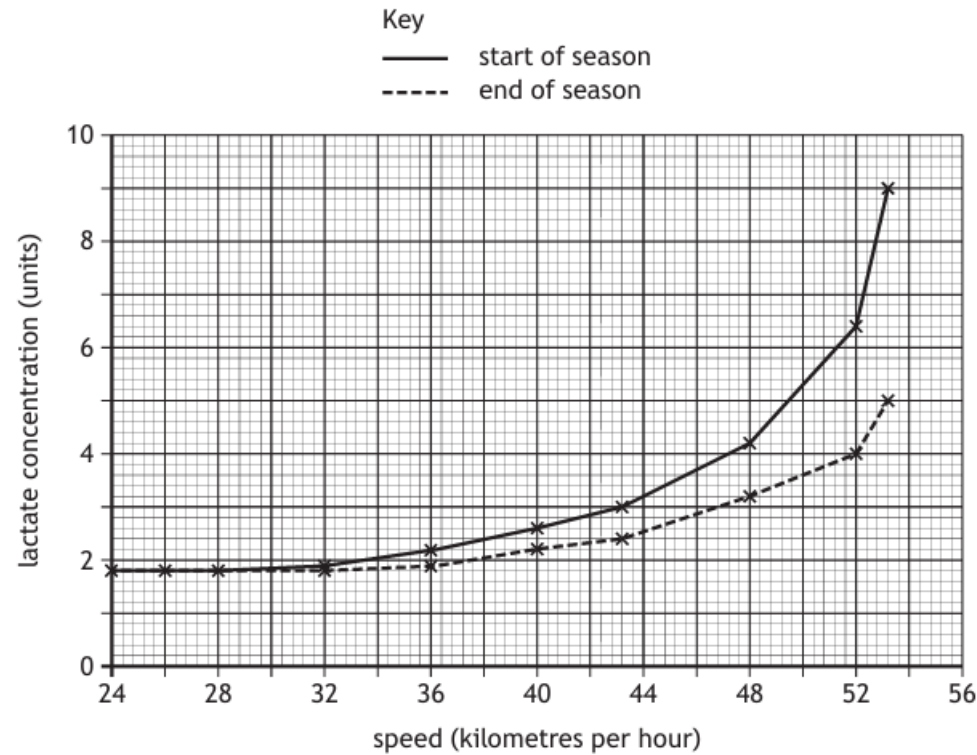
Space for calculation

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8. The graph shows these measurements at the start and end of the competition season.



Calculate how many times greater the maximum lactate concentration was at the start of the season compared to the end of the season.

1

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1. C ($4/0.04$)
2. 4 ($8/2$)
3. 3 ($27/9$)
4. 29 ($116/4$)
5. 67 ($201/3$)
6. 5 ($22/4.4$)
7. 65 ($52/0.8$)
8. 1.8 ($9/5$)