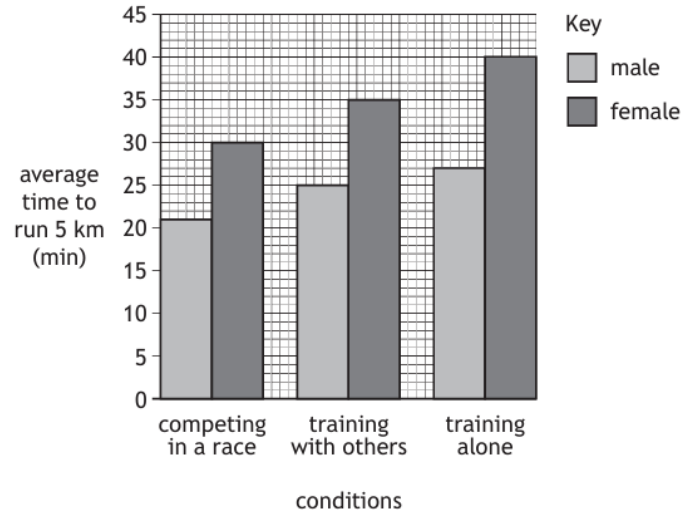


Processing Percentage Change Calculations

1. The graph shows the results of a survey carried out on members of a running club who ran 5 km under three different conditions.



What is the percentage improvement shown by females competing in a race compared to training alone?

- A 10%
- B 12.5%
- C 25%
- D 33.3%

Hint

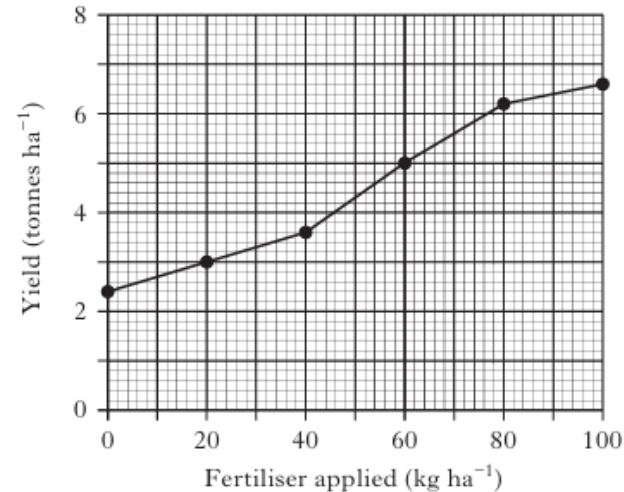
Improvement means a decrease in race time.

2. During aerobic respiration in a cell, one molecule of glucose yielded 38 molecules of ATP. During respiration without oxygen in the same cell, one molecule of glucose yielded 2 molecules of ATP.

Calculate the percentage decrease in ATP yield per glucose molecule when this cell carries out respiration without oxygen compared to when it respire aerobically.

- A 5%
- B 6%
- C 95%
- D 1800%

3. The graph below shows the effect of applying different concentrations of fertiliser on the yield of a crop plant.

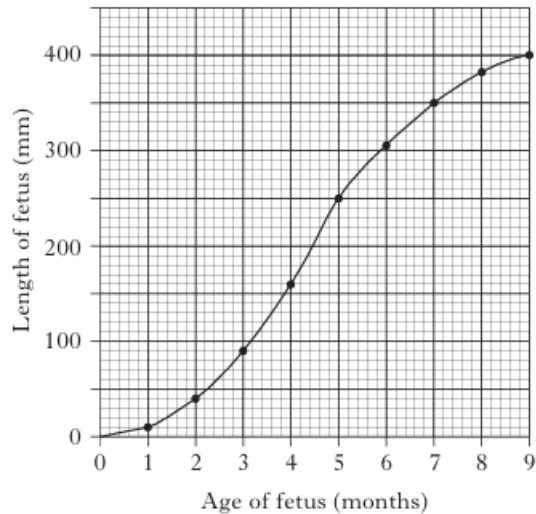


The percentage increase in yield obtained when the fertiliser application is increased from 60 to 80 kg ha⁻¹ is

- A 1.2%
- B 6.2%
- C 24%
- D 124%

Processing Percentage Change Calculations

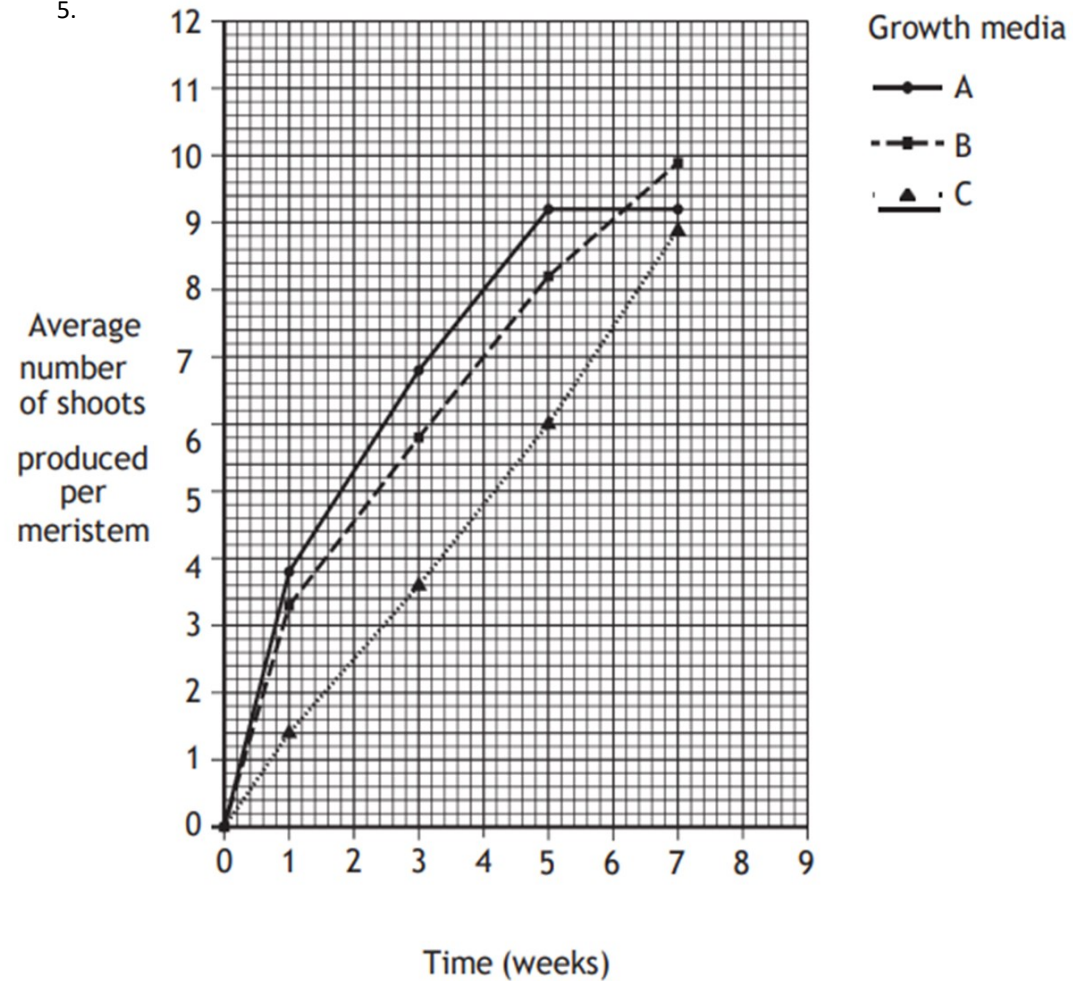
4. The graph below shows the growth in length of a human fetus before birth.



What is the percentage increase in length of the fetus during the final 4 months of pregnancy?

- A 33.3
- B 60.0
- C 62.5
- D 150.0

- 5.



Calculate the percentage increase in the average number of shoots produced per meristem between week 1 and week 7 in medium B.

1

Space for calculation

_____ %

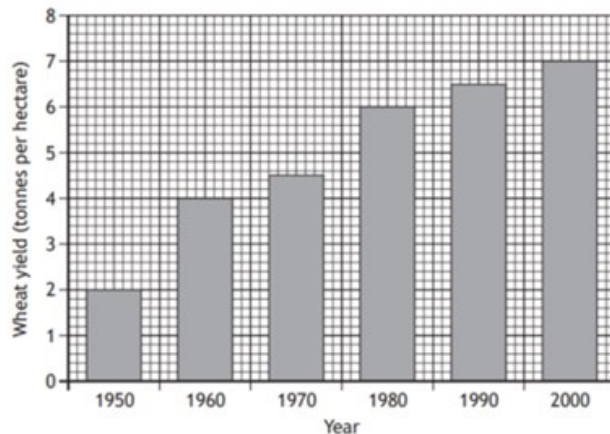
Processing Percentage Change Calculations

6. What is the percentage increase in the average height of wheat planted between 2.0m and 4.5m from the hedge.

Distance planted from hedge (m)	Average height of wheat after six weeks (cm)
2.0	45
2.5	54
3.0	60
3.5	69
4.0	78
4.5	90

_____ cm

7. What is the percentage increase in wheat yield from 1950 - 2000.

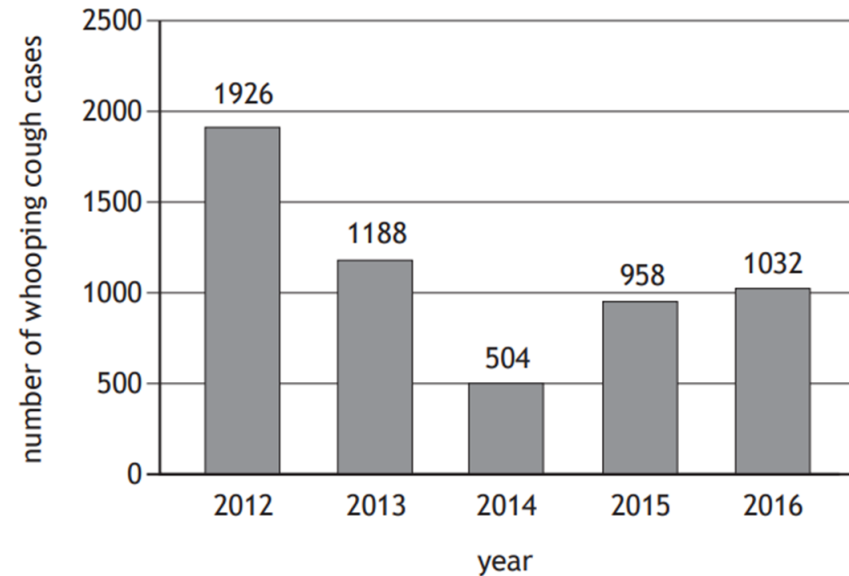


_____ tonnes per hectare

8. Calculate the percentage increase in cases from 2014 to 2016.

1

Space for calculation



9. Calculate the percentage decrease in the average leg length of the lizard population on Island 2 after the hurricane.

1

Space for calculation

Characteristic	Lizard population on Island 1		Lizard population on Island 2	
	Before hurricane	After hurricane	Before hurricane	After hurricane
Average foot surface area (mm ²)	16.0	16.9	14.6	16.1
Average leg length (mm)	22.0	20.3	25.6	22.4

Processing Percentage Change Calculations

10. Calculate the percentage increase in cases of Lyme disease in the UK between 1999 and 2009.

Table 1

Year	Average global temperature ($^{\circ}\text{C}$)
1981-1990	14.12
1991-2000	14.26
2001-2010	14.47

Table 2

Year	Number of cases of Lyme disease in the UK
1999	200
2004	515
2009	870

11. Calculate the percentage increase in the time taken for the paper disc to rise when the copper sulfate concentration increased from 0.2 mol l^{-1} to 1.0 mol l^{-1} .

Space for calculation

Concentration of copper sulfate solution (mol l^{-1})	Time taken for paper disc to rise (seconds)
0.2	8
0.3	12
0.4	15
0.6	18
0.8	19
1.0	20

12. Calculate the percentage increase in ethanol concentration between 12 and 36 hours growth in the 4% lactose flask.

Lactose concentration (%)	Ethanol concentration ($\text{g per } 100\text{ cm}^3$)	
	12 hours	36 hours
4	1.20	1.65
8	1.55	2.80
12	2.00	4.25
16	2.80	3.25
20	2.80	6.50

13. Identify the group that shows the greatest percentage decrease in death rate from CVD between 2001 and 2013.

Space for calculation

Death rate from CVD (per 100 000)				
Year	England		Scotland	
	Men	Women	Men	Women
2001	603	402	684	476
2005	490	337	577	406
2009	392	271	450	316
2013	324	221	396	275

Processing Percentage Change Calculations Answers

1. C
2. C
3. C
4. B
5. 200
6. 100
7. 250
8. 105
9. 12.5
10. 335
11. 150
12. 37.5
13. English men