Instructions

This numerical reasoning test comprises 30 questions, and you will have 30 minutes in which to correctly answer as many as you can. Calculators are permitted for this test, and it is recommended you have some rough paper to work on.

You will have to work quickly and accurately to perform well in this test. If you don't know the answer to a question, leave it and come back to it if you have time. Each question will have five possible answers, one of which is correct. You may click Back and Next during the test to review or skip questions.

You can submit your test at any time. If the time limit is up before you click submit the test will automatically be submitted with the answers you have selected. It is recommended to keep working until the time limit is up.

Try to find a time and place where you will not be interrupted during the test. The test will begin on the next page.
Q1 Which country has the largest number of males in employment?

(A) Belgium  
(B) Denmark  
(C) Ireland  
(D) Hungary  
(E) Greece

Step 1 – Calculate the number of males that are employed in Belgium, Hungary and Greece. Note that Denmark and Ireland have approximately half the total population of the other three countries and so can be ruled out immediately to save time.

Belgium = 10.4 x 35.6% = 3.7 million  
(Denmark = 5.4 x 58.2% = 3.14 million)  
(Ireland = 4.1 x 38.8% = 1.6 million)  
Hungary = 10.1 x 38.4% = 3.9 million  
Greece = 10.8 x 34.4% = 3.7 million

Thus the correct answer is (D) Hungary
Q2 What percentage do the five countries shown represent of the total EU population?

(A) 7.5%
(B) 8.5%
(C) 9.5%
(D) 10.5%
(E) 11.5%

Step 1 – Total the population of the five countries

10.4 + 5.4 + 4.1 + 10.1 + 10.8 = 40.8 million

Step 2 – Calculate the % of the total EU population

40.8 / 480 = 8.5%

Thus the correct answer is (B) 8.5%
Q3  Assuming that there are no other population factors than those shown in the table, what will be the annual population change of the five countries combined?

(A) 143,900  
(B) 167,550  
(C) 225,340  
(D) 368,200  
(E) 44.7 million

**Step 1 – Calculate each country’s change in population due to the population factors**  
Population change = increase from births – decrease from deaths + net migration

Belgium = 11.1 - 9.8 + 3.4 = 4.7  
Denmark = 12.0 – 10.3 + 0.9 = 2.6  
Ireland = 15.2 – 6.9 + 11.8 = 20.1  
Hungary = 13.1 – 10.4 + 1.8 = 4.5  
Greece = 9.6 – 9.5 + 3.1 = 3.2

**Step 2 – Calculate the change per 1,000 members of population**

Belgium = 4.7 x 10,400 = 48,880  
Denmark = 2.6 x 5,400 = 14,040  
Ireland = 20.1 x 4,100 = 82,410  
Hungary = 4.5 x 10,100 = 45,450  
Greece = 3.2 x 10,800 = 34,560

**Step 3 – Sum the figures for each country to calculate the population change**  
48,880 + 14,040 + 82,410 + 45,450 + 34,560 = 225,340

Thus the correct answer is (C) 225,340
Q4 If the population of Belgium increases at the same percentage rate as shown for 2012, in what year will the population reach 10.6 million?

(A) 2015  
(B) 2016  
(C) 2017  
(D) 2018  
(E) 2019

**Step 1 – Calculate change in population due to the population factors**

Population change = increase from births – decrease from deaths + net migration.

For Belgium this is: $11.1 - 9.8 + 3.4 = 4.7$ (per thousand of the population)

So $4.7 \times 10,400 = 48,880$ extra people in 2012.

The next step is to work this out as a percentage increase, not just take the number 48,880 and add it to each year.

$48,880 \div 10,400,000 \times 100 = 0.47\%$ increase.

**Step 2 – Calculate the population for subsequent years using this percentage growth.**

2013: $10,400,000 + 48,880 = 10,448,880$

2014: $10,448,880 \times 1.0047 = 10,497,990$

2015: $10,497,990 \times 1.0047 = 10,547,330$

2016: $10,547,330 \times 1.0047 = 10,596,903$

2017: $10,596,903 \times 1.0047 = 10,696,748$

So on day one of 2017 the population is 10,696,748, which means the 10.6m barrier must have been achieved during 2016.

Thus the correct answer is (B) 2016.
Q5 Which country has the largest absolute difference in the number of people dying compared to the number of people being born?

(A) Belgium
(B) Denmark
(C) Ireland
(D) Hungary
(E) Greece

**Step 1** - Calculate the difference in the birth rate and the mortality rate for four countries (ignoring Greece which has a negligible difference between the two figures):

- Belgium = $11.1 - 9.8 = 1.3$
- Denmark = $12.0 - 10.3 = 1.7$
- Ireland = $15.2 - 6.9 = 8.3$
- Hungary = $13.1 - 10.4 = 2.7$

**Step 2** - Calculate the absolute difference for each country

- Belgium = $1.3 \times 10,400 = 13,520$
- Denmark = $1.7 \times 5,400 = 9,180$
- Ireland = $8.3 \times 4,100 = 34,030$
- Hungary = $2.7 \times 10,100 = 27,270$

Thus the correct answer is (C) Ireland
Q6  In which month were PT Drinks sales one-third that of total sales?

(A) January  
(B) February  
(C) March  
(D) April  
(E) May

**Step 1 – Calculate for each month the fraction of PT Drinks sales compared to the total sales**

January = 53 / (53 + 59 + 49) = 0.329
February = 74 / (74 + 76 + 56) = 0.359
March = 80 / (80 + 60 + 86) = 0.370
April = 98 / (98 + 108 + 68) = 0.358
May = 114 / (114 + 120 + 108) = 0.333

Thus the correct answer is (E) May
Q7 If Kurnels continued to increase its sales at the same percentage rate as between April and May, what would Kurnels’ sales be in August (to the nearest $1,000)?

(A) $272,000  
(B) $372,000  
(C) $432,000  
(D) $2,720,000  
(E) $4,320,000

**Step 1 – Calculate the % rate of increase between April – May**

\[ 100\% \times \frac{108 - 68}{68} = 100\% \times \frac{40}{68} = 58.8\% \]

Alternatively, \( 108 \div 68 = 1.588 \) which is an increase of 58.8%.

**Step 2 – Calculate the future monthly sales figures for Kurnels**

June: \( 108,000 \times 1.588 = 171,504 \)

July: \( 171,504 \times 1.588 = 272,348 \)

August: \( 272,348 \times 1.588 = 432,489 \)

Step 2 – to the nearest $1,000

$432,489 = $432,000

Thus the correct answer is (C) $432,000
Q8 What was the difference between the total sales of Kurnels and those of Diapon between February-May?

(A) Kurnels smaller by $46,000
(B) Kurnels smaller by $36,000
(C) Kurnels greater by $26,000
(D) Kurnels greater by $36,000
(E) Kurnels greater by $46,000

Step 1 – Calculate the total sales for Kurnels between February-May
56 + 86 + 68 + 108 = 318

Step 2 - Calculate the total sales for Diapon between February-May
76 + 60 + 108 + 120 = 364

Step 3 – Calculate the difference between the two totals
318 – 364 = $46,000 less

Thus the correct answer is (A) Kurnels smaller by $46,000
Q9  Between which months did Kurnels show the greatest change in its proportion of total sales?

(A) January - February
(B) February - March
(C) March - April
(D) April - May
(E) Can't tell from the data

**Step 1** – Calculate Kurnels sales as a proportion of total sales for each month
January = 49 / (49 + 59 + 53) = 0.304
February = 56 / (74 + 76 + 56) = 0.272
March = 86 / (80 + 60 + 86) = 0.381
April = 68 / (98 + 108 + 68) = 0.248
May = 108 / (108 + 120 + 114) = 0.316

**Step 2** – Calculate the differences between consecutive months
January – February = 0.032 decrease
February – March = 0.109 increase
March – April = 0.133 decrease
April – May = 0.068 increase

Thus the correct answer is (C) March - April
Q10 If the three soft drinks manufacturers experience the same proportional increases in sales between May-June as between April-May, what will be the combined sales for the three soft drinks manufacturers in June (to the nearest $1,000)?

(A) $133,000  
(B) $171,000  
(C) $410,000  
(D) $437,000  
(E) Can't tell from the data

Step 1 – Calculate the proportional increase for each soft drinks manufacturer between April-May  
Kurnels: 108 ÷ 68 = 1.588 = 58.8% increase  
Diapon = 120 ÷ 108 = 1.111 = 11.1% increase  
PT Drinks = 114 ÷ 98= 1.163 = 16.3% increase

Step 2 - Calculate the June sales for each soft drinks manufacturer  
Kurnels = 158.8% x 108 = 171,529  
Diapon = 111.1% x 120,000 = 133,333  
PT Drinks = 116.3% x 114,000 = 132,612

Step 3 – Calculate the combined sales for the three soft drinks manufacturers in June  
171,529 + 133,333 + 132,612 = $437,474  
To the nearest $1,000 = $437,000

Thus the correct answer is (D) $437,000
A trader bought 150,000 shares in Hydro Tools at this month's low and 250,000 shares in Gel Products at this month's high. What is the trader's profit or loss if he sells all the shares at today’s prices? (Assume that there are no dealing charges).

(A) £655,000 loss
(B) £120,500 loss
(C) £83,000 loss
(D) £120,500 profit
(E) £655,000 profit

Step 1 – Calculate the cost of purchasing the 150,000 shares in Hydro Tools at this month’s low
150,000 x 1.42 = 213,000

Step 2 - Calculate the cost of purchasing the 250,000 shares in Gel Products at this month’s high
250,000 x 2.10 = 525,000

Step 3 – Calculate the sales value of 150,000 shares in Hydro Tools at today’s price
150,000 x 1.50 = 225,000

Step 4 – Calculate the sales value of 250,000 shares in Gel Products at today’s price
250,000 x 1.72 = 430,000

Step 5 – Calculate the profit/loss
225,000 + 430,000 - 213,000 - 525,000 = - £83,000

Thus the correct answer is (C) £83,000 loss
Q12  Yesterday, which share was the furthest from its yearly low in absolute terms?

(A) LPC Ltd
(B) Hydro Tools
(C) Gyromanic
(D) Flyer Travel
(E) Gel Products

**Step 1 – Calculate the difference between yesterday’s share price and the yearly low for each share.**

LPC Ltd: 2.60 – 2.30 = 0.30
Hydro Tools: 1.62 – 1.37 = 0.25
Gyromanic: 3.10 – 2.51 = 0.59
Flyer Travel: 2.27 – 2.05 = 0.22
Gel Products: 1.90 – 1.45 = 0.45

Thus the correct answer is (C) Gyromanic
Q13  How many shares of LPC Ltd and Flyer Travel Ltd can a trader buy today who spends £2.1 million and splits the value of the shares in the ratio of 2:5 respectively (ignoring any other taxes or charges incurred)?

(A) 350,000 shares (LPC Ltd), 500,000 shares (Flyer Travel Ltd)
(B) 300,000 shares (LPC Ltd), 504,000 shares (Flyer Travel Ltd)
(C) 250,000 shares (LPC Ltd), 600,000 shares (Flyer Travel Ltd)
(D) 200,000 shares (LPC Ltd), 500,000 shares (Flyer Travel Ltd)
(E) 150,000 shares (LPC Ltd), 600,000 shares (Flyer Travel Ltd)

**Step 1** – Split the £2.1 million in to the ratio of 2:5
LPC Ltd: £2.1 million x 2/7 = £0.6 million
Flyer Travel Ltd: £2.1 million x 5/7 = £1.5 million

**Step 2** – Calculate the number of LPC Ltd shares
£0.6 million / £2.40 = 250,000

**Step 3** – Calculate the number of Flyer Travel Ltd shares
£1.5 million / £2.50 = 600,000

Thus the correct answer is (C) 250,000 shares (LPC Ltd), 600,000 shares (Flyer Travel Ltd)
Q14 How much would the loss be from buying 125,000 Gyromanic shares at this month’s high, then selling all the shares at this month’s low?

(A) £63,750
(B) £175,000
(C) £225,750
(D) £251,250
(E) None of these

Step 1 – Calculate the cost of purchasing 125,000 Gyromanic shares at this month’s high
125,000 x 3.99 = £498,750

Step 2 - Calculate the revenue from selling 125,000 Gyromanic shares at this month’s low
125,000 x 2.59 = £323,750

Step 3 – Calculate the potential loss
£498,750 - £323,750 = £175,000

Thus the correct answer is (B) £175,000
Q15  Yesterday, Trader A spent £650,000 purchasing LPC Ltd shares and Trader B spent the same amount on Flyer Travel shares. If Trader A and Trader B each sold their entire shareholding today, what would be the difference in their respective profit or loss?

(A) Trader A £11,692 more
(B) Trader B £115,859 more
(C) Trader A £39,796 more
(D) Trader B £139,796 more
(E) Trader B £65,859 more

Step 1 – Calculate the profit/loss for Trader A
LPC Ltd: 2.4 x £650,000 / 2.6 = £600,00
£600,000 - £650,000 = £50,000 loss

Step 2 - Calculate the profit/loss for Trader B
Flyer Travel: 2.5 x £650,000 / 2.27 = £715,859
£715,859 - £650,000 = £65,859 profit

Step 3 – Calculate the difference
£65,859 + £50,000 = £115,859

Thus the correct answer is (B) Trader B £115,859 more
Q16 Which competitor, or competitors, are predicted in the Next Quarter to achieve sales of less than its average over Quarters 1-4?

(A) Competitor B
(B) Competitors B and C
(C) Competitors A and C
(D) Competitors C and D
(E) Competitor D

Step 1 – Calculate the average for each competitor
Competitor A: 40/4 = 10
Competitor B: 41/4 = 10.25
Competitor C: 53/4 = 13.25
Competitor D: 44/4 = 11
Competitor E: 40/4 = 10

Step 2 – Which is greater than Next Quarter’s predictions?
Competitors B and C

Thus the correct answer is (B) Competitors B and C
Q17 Assuming that the Next Quarter’s projection is accurate, but that in all subsequent Quarters sales drop by 5% each quarter, by how much will Competitor D’s sales in Year 2 exceed those of Year 1 (to the nearest $10,000)?

(A) $520,000  
(B) $620,000  
(C) $720,000  
(D) $820,000  
(E) $920,000

**Step 1 – Sum Competitor D’s sales for Year 1**

\[ 11 + 15 + 8 + 10 = \$44 \text{ million} \]

**Step 2 - Calculate Competitor D’s sales for Year 2**

\[
12 + (12 \times 0.95) + (12 \times 0.95 \times 0.95) + (12 \times 0.95 \times 0.95 \times 0.95)
\]

\[
= 12 + 11.4 + 10.83 + 10.29
\]

\[
= \$44.52 \text{ million}
\]

**Step 3 – Calculate the difference**

\[ 44.52 - 44 = 0.52 \text{ million} \]

Thus the correct answer is (A) $520,000
Q18 Competitor C operates 18 stores compared to Competitor E’s 15 stores. How much more sales revenue would Competitor E have needed to make to match Competitor C’s average sales per store in Quarter 1?

(A) $1 million  
(B) $2 million  
(C) $3 million  
(D) $4 million  
(E) $5 million

Step 1 – Calculate Competitor C’s average sales in Quarter 1
12 / 18 = 0.67

Step 2 – Calculate what Competitor E’s sales would have needed to be in Quarter 1
0.67 x 15 = 10  
Additional sales = $1 million

Thus the correct answer is (A) $1 million
Q19 In the Next Quarter Competitors A and B merge their sales operations, and in response Competitors C and D decide to operate together. Competitors A and B exceed their projected quarterly sales by 2/9ths. Next Quarter’s sales for Competitors C and D are in line with their averages over the previous 4 quarters. What is the value of the combined sales of Competitors A-E for the Next Quarter, to the nearest $million? (Assume that Competitor E’s projected sales for the next quarter are correct).

(A) $11 million  
(B) $16 million  
(C) $26 million  
(D) $61 million  
(E) Can’t tell from data

Step 1 – Calculate the value of Competitor A and B’s sales

\[ 21 + \left(21 \times \frac{2}{9}\right) = 25.67 \]

Step 2 - Calculate the average sale for Competitor C

\[ \frac{53}{4} = 13.25 \]

Step 3 - Calculate the average sale for Competitor D

\[ \frac{44}{4} = 11 \]

Step 4 - Calculate the total sales, including Competitor E

\[ 25.67 + 13.25 + 11 + 11 = 60.92 \] million

Step 5 – To the nearest $million = $61 million

Thus the correct answer is (D) $61 million
Q20 Which competitor has a ratio of 4:5 Quarter 4 : Quarter 3 sales?

(A) Competitor A
(B) Competitor B
(C) Competitor C
(D) Competitor D
(E) Competitor E

**Step 1 – Calculate the ratios for each competitor**

*Competitor A*: 13 / 9 = 0.62
*Competitor B*: 12 / 10 = 1.25
*Competitor C*: 12 / 15 = 0.8 = 4 / 5
*Competitor D*: 10 / 8 = 1.20
*Competitor E*: 8 / 13 = 1.44

Thus the correct answer is (C) Competitor C
Q21 What was the difference in the value of FLAC product sales compared to BEC product sales?

(A) £14,650  
(B) £17,105  
(C) £27,545  
(D) £47,545  
(E) £64,650

**Step 1 – Calculate FLAC product sales**

\[
(3,500 \times £4.80) + (5,500 \times £4.65) + (4,500 \times £4.95) = £16,800 + £25,575 + £22,275 = £64,650
\]

**Step 2 – Calculate BEC product sales**

\[
(6,500 \times £4.25) + (4,800 \times £4.15) = £27,625 + £19,920 = £47,545
\]

**Step 3 – Calculate the difference**

\[
£64,650 - £47,545 = £17,105
\]

Thus the correct answer is (B) £17,105
Q22  Which product code has the highest profit margin? (Assume Profit margin = Sales price – Production costs).

(A) BEC 1A  
(B) BEC 5C  
(C) FLAC 3X  
(D) FLAC 9Y  
(E) FLAC 4T

**Step 1 – Sum the 3 Production costs for each product code**

BEC 1A: 180 + 84 + 62 = 326  
BEC 5C: 172 + 92 + 74 = 338  
FLAC 3X: 160 + 74 + 94 = 328  
FLAC 9Y: 150 + 101 + 108 = 359  
FLAC 4T: 164 + 105 + 94 = 363

**Step 2 – Calculate the profit per unit for each product code**  
Profit per unit = Sales value – production cost

BEC 1A: 4.25 – 3.26 = 0.99  
BEC 5C: 4.15 – 3.38 = 0.77  
FLAC 3X: 4.80 – 3.28 = 1.52  
FLAC 9Y: 4.65 – 3.59 = 1.06  
FLAC 4T: 4.95 – 3.63 = 1.32

Thus the correct answer is (C) FLAC 3X
Q23 What would have been the additional profit on BEC 5C units if all those that had been produced in January were sold?

(A) £27,625  
(B) £25,428  
(C) £15,655  
(D) £11,700  
(E) £7,055

**Step 1** – Calculate the difference between number of units produced and sold.

6,500 – 4,800 = 1,700 units

**Step 2** – Calculate the additional profit for 1,700 units

1,700 x £4.15 = £7,055

Thus the correct answer is (E) £7,055

**Tip**: this is actually quite an easy question. Don’t fall into the trap of working out the profit based on (sale price – production costs) because these extra 1,700 have already been produced. It is a sunk cost and therefore any sales are profit.
Q24 If the labour, design and Misc costs for producing the FLAC 9Y decrease by 5%, 7.5% and 12.5% respectively, what will be the profit when selling 25,000 FLAC 9Y units?

(A) £116,250.50  
(B) £85,442.00  
(C) £48,296.25  
(D) £33,642.50  
(E) £19,450.50

**Step 1** – Calculate the new costs

Labour: 95% x 150 = £142.50 per 100 units  
Design: 92.5% x 101 = £93.43 per 100 units  
Misc costs: 87.5% x 108 = £94.50 per 100 units

**Step 2** – Sum the new costs

£142.50 + £93.43 + £94.50 = £330.43 per 100 units

**Step 3** – Calculate the sales value

25,000 x 4.65 = £116,250

**Step 4** – Calculate the profit

£116,250 – (£330.43 x 25,000 / 100) = £116,250 - £82,607.50 = £33,642.50

Thus the correct answer is (D) £33,642.50
Q25 An order valued at £14,350 is placed for FLAC 4T units at a sales price that is £0.85 below the norm. What is the profit on this order?

(A) £1,945
(B) £1,845
(C) £1,645
(D) £1,745
(E) Can't tell from data

**Step 1** – Calculate the new FLAC 4T sales price
£4.95 - £0.85 = £4.10

**Step 2** – Calculate the number of units sold
£14,350 / £4.10 = 3,500

**Step 3** – Calculate the production costs
3,500 x (164 + 105 + 94)/100 = £12,705

**Step 4** – Calculate the profit
£14,350 - £12,705 = £1,645

*Thus the correct answer is (C) £1,645*
Q26 For the company which achieved the highest sales per number of their stores in France, what was their sales value across the five countries combined?

(A) €40 million  
(B) €85 million  
(C) €110 million  
(D) €140 million  
(E) €155 million

Step 1 – Calculate the average sales per store in France
- **Wellings**: \( \frac{20}{3} = 6.67 \)  
- **Seacombe**: \( \frac{25}{6} = 4.18 \)  
- **Tillings Ltd**: \( \frac{15}{3} = 5 \)  
- **Kingleys**: \( \frac{25}{5} = 5 \)  
- **Astors**: \( \frac{5}{11} = 0.45 \)

Step 2 – Sum the sales for Wellings across all five countries
\[ 35 + 25 + 20 + 15 + 15 = €110 \text{ million} \]

Thus the correct answer is (C) €110 million
Q27 The economic recession is predicted to decrease the total retail sales in Germany, Ireland and Italy by 7.2%, 9% and 4.6% respectively. What total sales value is predicted in Germany, Ireland and Italy combined?

(A) €302.5 million  
(B) €307.6 million  
(C) €310.4 million  
(D) €322.4 million  
(E) €330.6 million

**Step 1 – Calculate the total sales for the 3 countries**
- Germany: $15 + 30 + 20 + 25 + 10 = 100$
- Ireland: $25 + 15 + 20 + 15 + 30 = 105$
- Italy: $15 + 30 + 35 + 20 + 25 = 125$

**Step 2 – Calculate the decreased sales for each of the 3 countries**
- Germany: €$100 \times 92.8\% = 92.8$
- Ireland: €$105 \times 91\% = 95.55$
- Italy: €$125 \times 95.4\% = 119.25$

**Step 3 – Sum the decreased sales for each of the 3 countries**

$92.8 + 95.55 + 119.25 = 307.60$

Thus the correct answer is (B) €307.6 million
Q28 Which two countries have the same average sales across the five retail companies?

(A) UK, Ireland
(B) Ireland, France
(C) Italy, Germany
(D) Germany, UK
(E) France, UK

Step 1 – Calculate the total sales per country (this will give you the country with the “highest average sales per country” since each figure will need to be divided by 5)

UK: 35 + 10 + 20 + 10 + 15 = 90
Ireland: 25 + 15 + 20 + 15 + 30 = 105
France: 20 + 25 + 15 + 25 + 5 = 90
Germany: 15 + 30 + 20 + 25 + 10 = 100
Italy: 15 + 30 + 35 + 20 + 25 = 125

Thus the correct answer is (E) France, UK
Q29 What would be the value of the UK and the French sales in £ (assume an exchange rate of €1.25 to the £)?

(A) £144 million
(B) £112.5 million
(C) £80 million
(D) £72 million
(E) £60 million

**Step 1 – Calculate the UK sales**

\[35 + 10 + 20 + 10 + 15 = 90\]

**Step 2 - Calculate the French sales**

\[20 + 25 + 15 + 25 + 5 = 90\]

**Step 3 – Convert the total into £**

\[180 / 1.25 = £144 million\]

Thus the correct answer is (A) £144 million
Q30 Wellings Ltd sells off its Italian stores and then takes over Seacombe’s stores except those in Ireland. The merged Wellings Seacombe Ltd sets a target to increase total sales across the European stores by 20% a year for the next three years. What will the total sales be in three years’ time (to the nearest million)?

(A) £33 million  
(B) €190 million  
(C) £290 million  
(D) £328 million  
(E) £382 million

**Step 1** – Calculate the total sales for the Wellings Seacombe Ltd operation

Wellings (UK, Ireland, France, Germany) = 35 + 25 + 20 + 15 = 95

Seacombe (UK, France, Germany, Italy) = 10 + 25 + 30 + 30 = 95

Total sales = €190 million

**Step 2** – Calculate the increase in sales over the next 3 years

€190 million x 1.2 x 1.2 x 1.2 = £328.32 million

**Step 3** – To the nearest million = £328 million

Thus the correct answer is (D) £328 million
-- End of Test --