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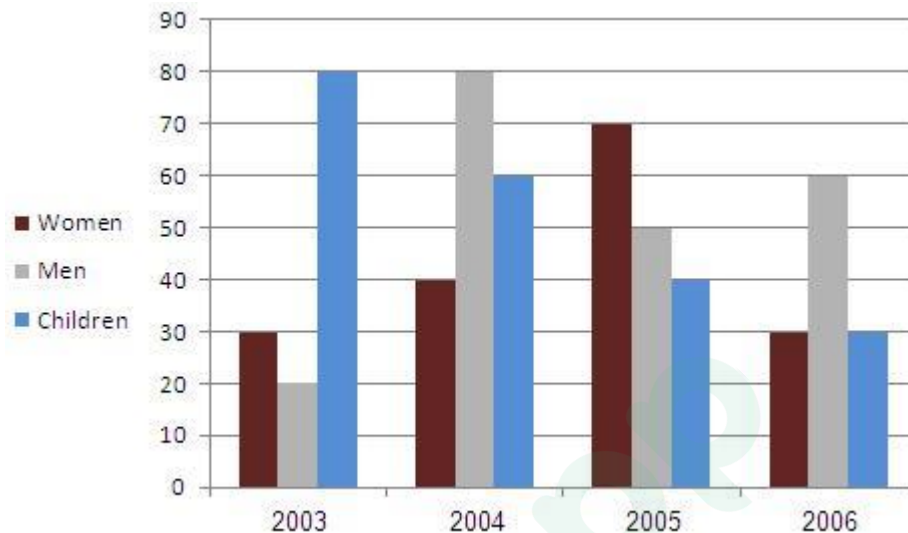
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Free Numerical Reasoning Test

(With answers and explanations)

Daily Average Number of Swimmers - Aldeburgh Beach (High Season)



1. In which year was the average number of daily swimmers the highest?

- A. 2003
- B. 2004
- C. 2005
- D. 2006
- E. Cannot say

Answer

In this question one should make an estimation by looking at the numbers (there is no need to calculate) and see that 2004 appears to be the largest.

Here is the long calculation for the number of swimmers each year:

$$2003: 30 + 20 + 80 = 130$$

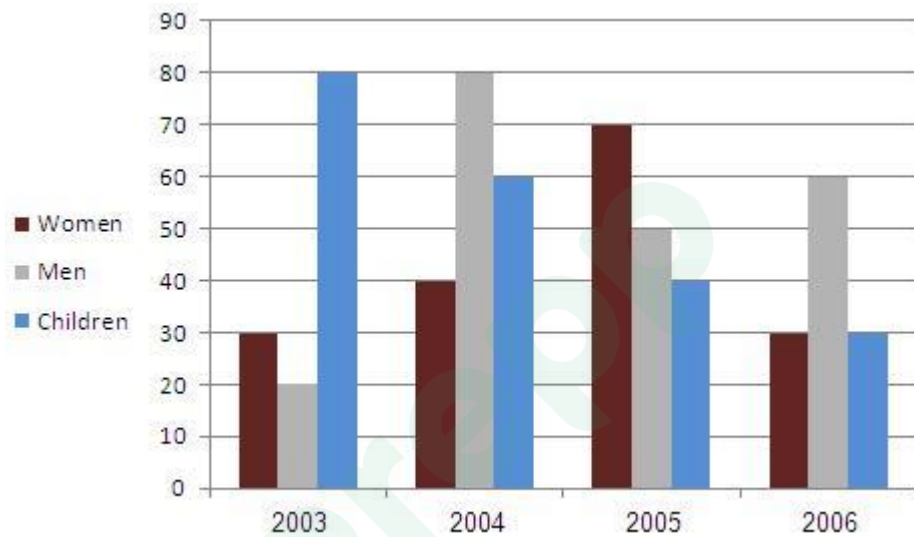
$$2004: 40 + 80 + 60 = 180$$

$$2005: 70 + 50 + 40 = 160$$

$$2006: 30 + 60 + 30 = 120$$

The answer is **B- 2004**.

Daily Average Number of Swimmers - Aldeburgh Beach (High Season)



2. Assuming the children group is 50% boys and 50% girls, how many more males swam at Aldeburgh beach in 2006 than in 2005?

- A. 35
- B. 45
- C. 10
- D. 5
- E. Cannot say

Answer

If the children group is equally distributed between boys and girls, then we can simply divide the amount of children by two, and add it to the amount of male swimmers in each year:

2006

Men:60

Boys: $30/2=15$

Total male swimmers: 75

2005

Men:50

Boys: $40/2=20$

Total male swimmers: 70

$(75-70)=5$ more male swimmers in 2006.

The answer is **D- 5**.

Nutritional Values, Product X

Serving size 1/2 cup (114g). Servings per container: 4		
Calories	90	
Calories from fat	30	
% Daily Value		
Total Fat	3g	5
Saturated fat	0g	0
Cholesterol	0mg	0
Sodium	300mg	13
Total Carbohydrate	13g	4
Dietary fiber	3g	12
Sugars	3g	
Protein	3g	
Vitamin C		60%
Iron		4%

*% Daily values are based on a 2000 calorie diet

3. How many calories originated in fat will be consumed when eating 1.5 cups of product X?

- A. 120
- B. 135
- C. 45
- D. 90
- E. Cannot say

Answer

The table indicates nutritional values per one serving size of product X, which is equivalent to half a cup.

Each cup of Product X contains 30 calories from fat.

Eating 3 cups of Product X will result in the consumption of $(30 \times 3) = 90$ calories.

The answer is **D- 90**.

Nutritional Values, Product X

Serving size 1/2 cup (114g). Servings per container: 4		
Calories	90	
Calories from fat	30	
% Daily Value		
Total Fat	3g	5
Saturated fat	0g	0
Cholesterol	0mg	0
Sodium	300mg	13
Total Carbohydrate	13g	4
Dietary fiber	3g	12
Sugars	3g	
Protein	3g	
Vitamin C		60%
Iron		4%

*% Daily values are based on a 2000 calorie diet

4. How many grams of dietary fibre should a person who follows a 2000 calorie - diet consume if he already ate an entire container of product x today?

- A. 22
- B. 13
- C. 19
- D. 8
- E. Cannot say

Answer

The table indicates nutritional values per one serving size of product X and not per the whole container. The whole container has four servings, and thus one serving equals one quarter.

One serving contains 3 grams which constitute 12% of the daily recommended amount.

A person who eats a whole container of product X consumes $(3 \times 4) = 12$ grams.

Tip: Dividing a certain partial amount by its relative size will always give the total amount!

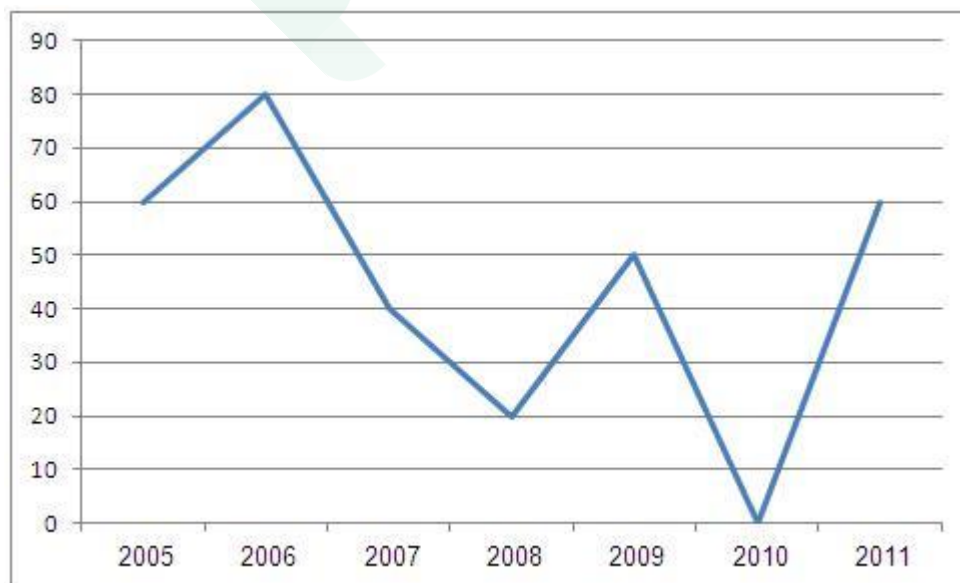
Since 3 grams represent 12%, or 0.12 of the total amount, we can divide 3 by 0.12 to get the full amount required:
 $3 / 0.12 = 25$.

Since he ate 12 grams, he still needs to eat $(25 - 12) = 13$ grams of dietary fibre.

To get a full review of percentages practice with our numerical reasoning packs!

The answer is **B- 13 grams**.

Introduction to Economics Exam Statistics (% of students who passed)



5. In which of the following years did over 2/3 of the students who took the exam not pass it?

- A. 2005
- B. 2006
- C. 2008
- D. 2009
- E. Cannot say

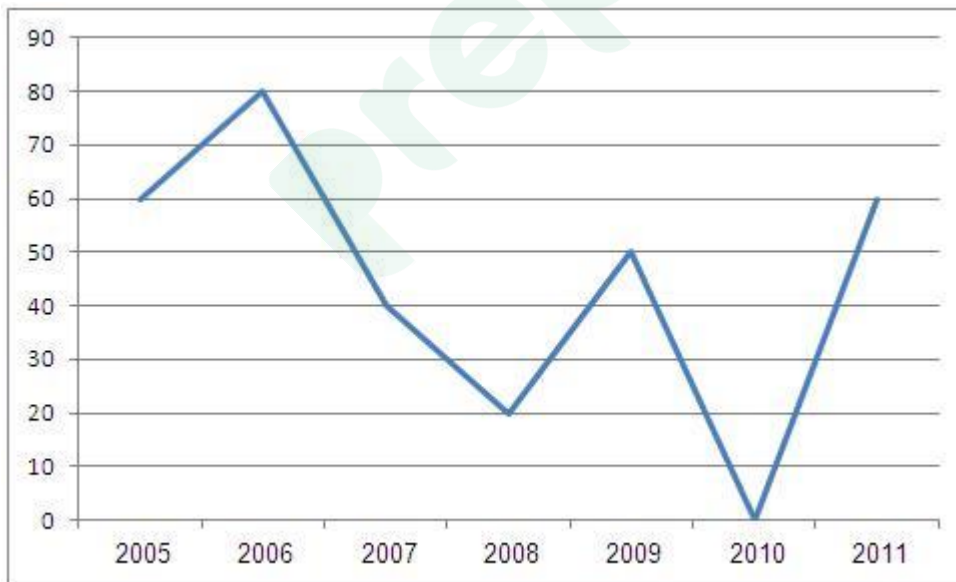
Answer

We're looking for a year in which over 2/3 of the students failed. In fact we're looking for a year in which less than a third of the students passed.

There are two years that match the criteria: 2008 and 2010, but only 2008 appear as an optional answer.

The answer is **C- 2008**.

Introduction to Economics Exam Statistics (% of students who passed)



6. It is known that a quarter of the students who passed the exam in 2007, passed it at the first trial. Assuming each exam has two trials, what percentage of all the students who took the exam that year passed it in the second trial?

- A. 10
- B. 15
- C. 30

- D. 75
- E. Cannot say

Answer

This question looks for a percentage rather than an absolute number. Therefore, the number we choose for carrying the calculation is arbitrary! We could also just use x or any other number. For example:

Call the number of students who took the test X. The chart indicates that 40% of X passed the test, which is $0.4 \cdot X$.

If a quarter of $0.4 \cdot X$ passed it in the first trial, then three quarters passed it in the second trial:

$$0.75 \cdot 0.4 \cdot X = 0.3 \cdot X. \text{ 0.3 is equal to 30\%}$$

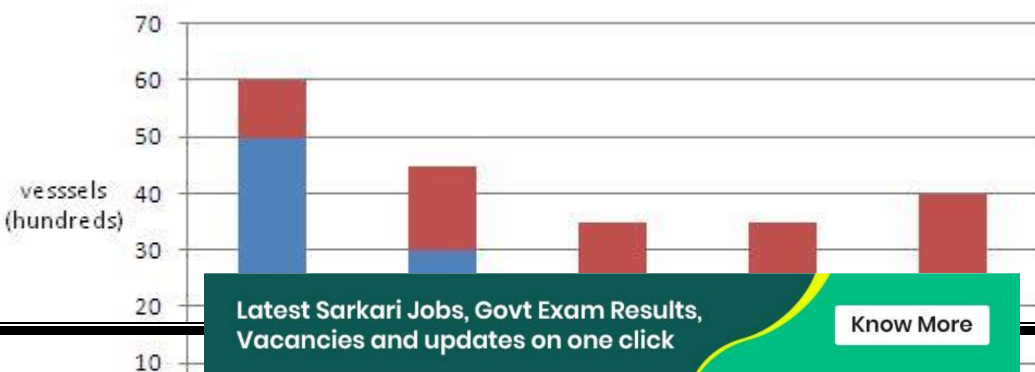
The answer is C- 30.

Tip: Use the number 100! According to the chart, out of the 100 students, 40% passed it in one of the trials, which is equal to 40 students.

Out of the 40 students who passed the exam, a quarter (25%), passed it on the first trial. That is: $40 \cdot 0.25 = 10$

Therefore, 30 students ($40 - 10$) passed the second trial. These 30 make 30% of the 100 who took the exam.

European Large Family Car Sales (Delivered by Sea Vessels)



7. Sea delivery per car (either SUV or minivan) costs \$25. What were the sea delivery costs for large family cars in 2008?

- A. 19 million
- B. 42.5 million
- C. 45.5 million
- D. 47.5 million
- E. Cannot say

Answer

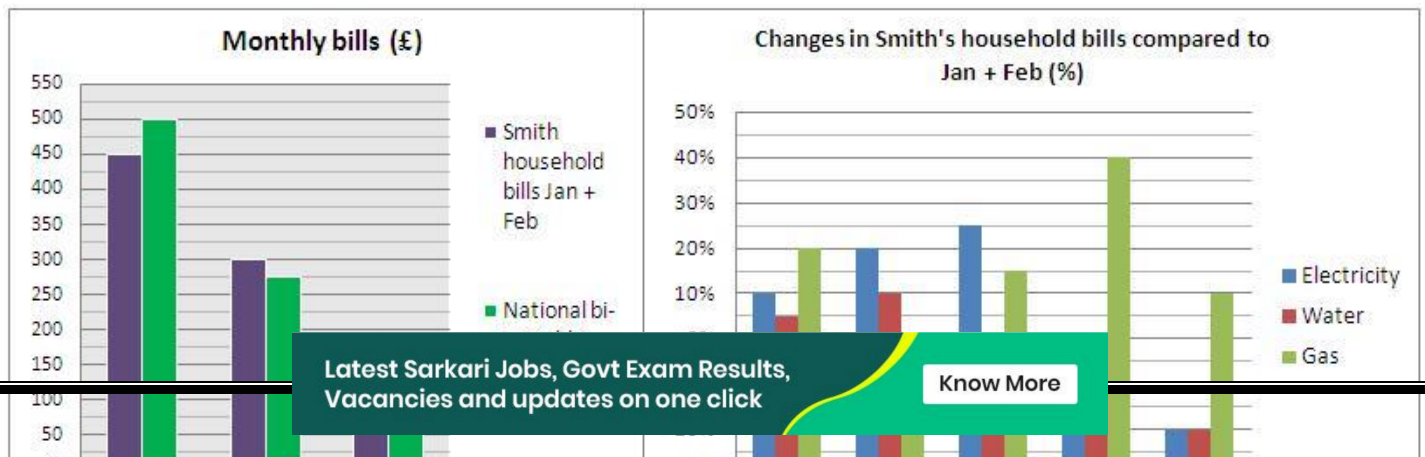
In 2008, there were $20 \times 100 = 2000$ vessels of minivans \times 500 minivans in each vessel = 1,000,000 minivans.

There were also $15 \times 100 = 1500$ vessels of SUVs \times 600 SUVs in each vessel = 900,000 SUVs

$1,000,000 + 900,000 = 1,900,000$ cars sold in total \times \$25 per car delivery = \$47,500,000 total delivery costs in 2008.

The answer is **D- 47.5 million.**

The Smiths are investigating irregularities in their household bills:



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8. How many bi-monthly electricity bills of Smith household are higher than the national average?

- A. 0
- B. 1
- C. 2
- D. 3
- E. 4

Answer

The correct answer is C: 2 bi-monthly electricity bills, those of May+Jun and Jul+Aug.

The national average of a bi-monthly electricity bill is £500 (green column).

The Smiths' bi-monthly electricity bill of Jan+Feb was £450 (blue column).

The chart on the right informs us about changes of the bi-monthly electricity bill relative to the Smiths' Jan+Feb bill. Therefore, not every increase necessarily represents a higher payment than the national average.

Note that the bills of Sep+Oct and Nov+Dec were lower than that of Jan+Feb, and thus cannot be higher than the national average, given that Jan+Feb's were already lower than the national average. Therefore, they can be eliminated from the start.

The electricity bill of Mar+Apr was 10% higher than that of Jan+Feb:

$110\% \text{ of } £450 = 1.1 \times 450 = £495 < 500\%$. This is not higher than the national average.

The electricity bill of May+Jun was 20% higher than that of Jan+Feb:

$120\% \text{ of } £450 = 1.2 \times 450 = £540 > 500\%$. This is higher than the national average.

The electricity bill of Jul+Aug was 25% higher than that of Jan+Feb. It is a higher figure than the previous bi-monthly bill, thus we already know it is higher than the national average and we don't need to calculate the actual sum.

The answer is **C- 2**.

Natural Resources Market Annum Statistics

Products	No. of employees (thousands)	Value of extracted produce (millions)	Market value (millions)	
			Asia	U.S.A
oil	2,572	\$7,568	\$487	\$1,574
copper	1,235	\$3,587	\$831	\$928
coal	957	\$3,456	\$728	\$1,375
uranium	1,542	\$6,875	\$427	\$3,208
silver	1,012	\$3,500	\$700	\$1,789

9. On average, how much market value in Asia would a Uranium employee create per week (52 weeks a year)?

- A. \$5.3
- B. \$5.5
- C. \$5.7
- D. \$5.9
- E. Cannot

Answer

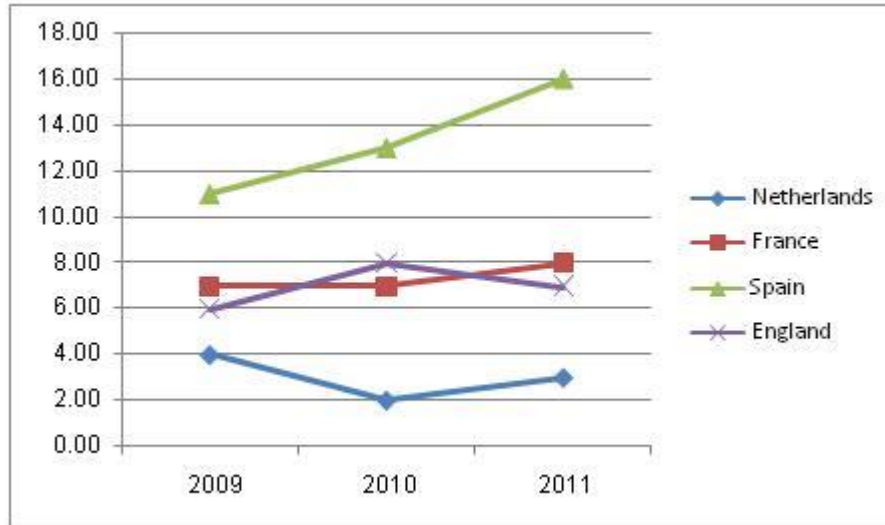
The market value of Uranium in Asia is \$427,000,000.

This sum is divided by the number of Uranium employees (1,542,000)
 $= 427,000,000 / 1,542,000 = \276.91

\$276.91 is the market value in Asia for extracted Uranium per employee per annum. The question refers to a week therefore we divide the calculated sum (representing a year) by 52
 $= 276.91 / 52 = \$5.3$

The answer is **A- \$5.3**

Unemployment Rate in European Countries (%)



10. In 2009, there were 667,284 unemployed in Netherlands, whose population was 27.53% of the UK for that year. With a fixed annual population increase of 0.639%, approximately how many unemployed are in the UK in 2011?

- A. 6,987,322
- B. 4,801,138
- C. 8,511,287
- D. 6,895,245
- E. 4,296,108

Answer

While unemployment rates are measured in proportion to the labour force and not the entire population, you must answer according to the data you are given. That is why the "Cannot say" option does not appear..

Netherlands population 2009: $667,284 / 0.04 = 16,682,100$.

UK population 2009: $16,682,100 / 0.2753 = 60,596,077$

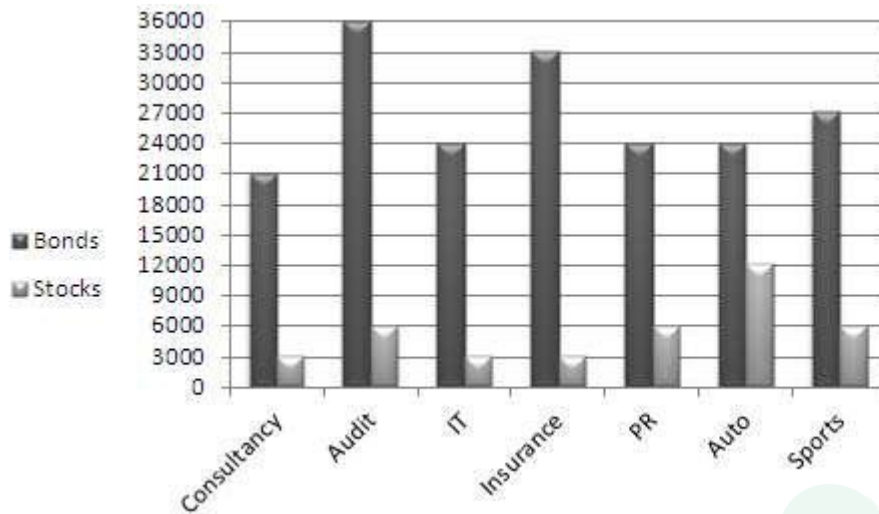
UK population 2011: $60,596,077 * 1.00639^2 = 61,372,968$

UK unemployed 2011: $61,372,968 * 0.07 = 4,296,108$

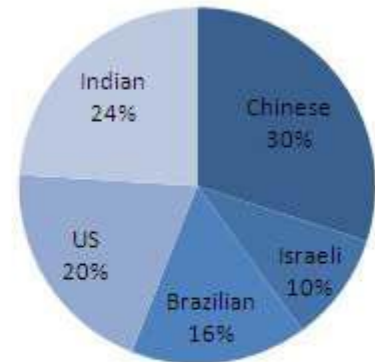
The answer is **E- 4,296,108**.

T.M. Funds - 2011

Distribution of Securities (000s)



Origin of Insurance Securities



11. If the number of Chinese Insurance stocks represented 3.5% of all Insurance securities, approximately how many Insurance bonds were Chinese?

- A. 9,200,000
- B. 9,500,000
- C. 10,800,000
- D. 910,000
- E. 1,080,000

Answer

Chinese Insurance Stocks comprise 3.5% of all Insurance securities, which leaves 26.5% of Chinese bonds.

The total number of Insurance securities is: $33,000,000 + 3,000,000 = 36,000,000$.

Now we only need to calculate 26.5% of 36,000,000:
 $(36,000,000 * 0.265) = 9,540,000$, which is approximately 9,500,000

The answer is **B- 9,500,000**.

Currency Exchange Rates

	Brazilian Real	Canadian Dollar	Euro	British Pound	Japanese Yen	Swiss Franc	U.S. Dollar
USD(\$)	2.28	1.14	0.83	0.56	118.5	1.29	-----
Euro(€)	2.74	1.37	-----	0.6	142.4	1.55	1.20
Yen(¥)	0.019	0.009	0.007	0.005	-----	0.011	0.008

12. A rumour about an upcoming recession in Japan has reduced the value of the Yen 7% compared with the Euro. How many Euros can you now buy for 500 Yen?

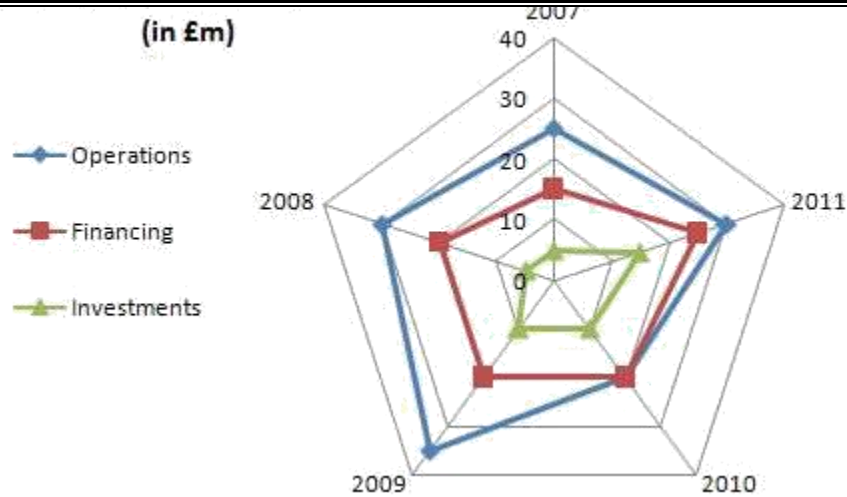
- A. 3.5
- B. 3.26
- C. 3.15
- D. 3.76
- E. None of the above

Answer

500 Japanese Yen before the reduction were worth = $500 \times 0.007 = 3.5$ Euro (the 0.007 figure is taken from the data). After a reduction of 7%, they are now worth $3.5 \times 0.93 = 3.26$ Euro.

The answer is **B- 3.26**

SPR's Cash Flow Statement



*Cash Flow from investments = Proceeds from sales + Dividends earned.

13. If the value of the company's cash flow from operations decreased by 2.7% in 2012, and 63% of their total cash flow was from operations, what would be the total balance of the company, in millions?

- A. 30.89
- B. 41.37
- C. 45.2
- D. 47
- E. 46.33

Answer

In order to solve this question we must first find the value of cash flow from operations in 2011, where it was 30 million. We then calculate a 2.7% decrease: $30 \times 0.973 = 29.19$

We can now find the total balance using the percentage given in the second part of the question: $29.19 / 0.63 = 46.33$

The answer is **E- 46.33**.

Product	Total Cost per Unit (in £)			Sale Price per Unit
	Manufacture	Service (monthly)	Other	
Bared 120	236	37	95	792
Bared 260	268	37	96	797
Bared 450	320	38	130	987
Calir XC	408	56	240	1734
Calir XR	432	57	256	2326

14. When the sale prices of Calir's product line were decreased by 25%, £65,277 in revenues were generated in less than 2 weeks. If the sales ratio of XC to XR units was 3:4 respectively, what is the difference in the number of units sold between the two product types?

- A. 5
- B. 18
- C. 6
- D. 22
- E. Cannot say

Answer

Remember that ratios do not represent real numbers. We need to find the multiplication factor which connects us to the real numbers.

Let's look at the entire mathematical expression that represents the data and the solution:

$$0.75 * (1734 * 3X + 2326 * 4X) = £65,277$$

0.75 is the 25% price reduction that applies on both products.

1734 and 2326 are the prices of XC and XR units, respectively.

X is the multiplication factor that tells us the real numbers of units sold, instead of just the ratio. In fact, it is also the difference we're looking for.

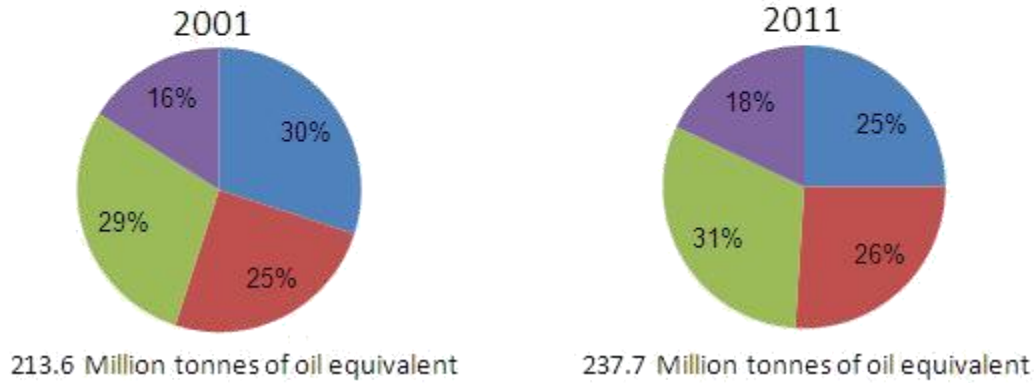
Solving this gives us $x=6$. When applying the multiplication factor to the basic ratio we get:
 $3 * 6 = 18$ units of XC, $4 * 6 = 24$ units of XR

The answer is **C- 6**.

Final Energy Consumption

(In primary energy equivalents)

■ Industry ■ Transport ■ Domestic ■ Services



*Figures taken from the UK national archives.

15. Approximately, what is the percentage growth in final energy consumption for the domestic sector in million tonnes of oil equivalent?

- A. 2
- B. 2.08
- C. 20.88
- D. 23.81
- E. 18.96

Answer

To answer this question we must first find the amount of oil equivalent used by the domestic sector in each year.

In 2001: $213.6 \times 0.29 = 61.94$ million tons.

In 2011: $237.7 \times 0.31 = 73.69$ million tons.

The percentage growth rate would be: $(73.69/61.94) - 1 = 0.18957$. Multiply by 100 to get 18.96%.

In short:

$[(237.7 \times 0.31) / (213.6 \times 0.29) - 1] \times 100 = 18.96$

The answer is **E- 18.96**



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