Numerical Reasoning
Practice Test 9

Solutions Booklet

Howards and Makepeace
Clothing Brand Sales (£1,000s)

Breakdown of the previous month's total sales turnover and profit

Brand a Sales Turnover and Profit (Quarter 4 – third month)		Estimate
Sales turnover	23,000	25,000
Sales tax (14 %)	3,220	3,500
Net Turnover	19,780	21,500
Variable Costs	5,500	5,900
Fixed Costs	3,300	3,400
Profit	10,980	12,200

1) If Howards and Makepeace's annual sales target for Brand b was £690,000, what fraction of this were actual Brand B sales?

    (A) 1/3
    (B) 22/70
    (C) 3/5
    (D) 2/5

The information that we need is shown in the graph *Clothing brand sales*.

Step 1 – Calculate the total annual Brand b sales by adding the 4 quarters
65 + 60 + 78 + 73 = 276

Step 2 – Calculate the fraction compared to the annual sales target
276 / 690 = 2/5

So the correct answer is (D) 2/5

2) What are the average sales per quarter for each brand (in the order Brand c; b; a)?

(A) 70,500; 69,000; 61,250
(B) 7,050; 6,900; 6,125
(C) 61,250; 69,000; 70,500
(D) 61; 71; 69

The information that we need is shown in the graph *Clothing brand sales.*

Step 1 - Calculate the total clothing sales, as follows;
Brand a = 59 + 58 + 75 + 53 = 245
Brand b = 65 + 60 + 78 + 73 = 276
Brand c = 74 + 72 + 70 + 66 = 282

Step 2 - Calculate the average sales per quarter, as follows;
Brand a (245 / 4) = 61.25 i.e. 61,250
Brand b (276 / 4) = 69 i.e. 69,000
Brand c (282 / 4) = 70.5 i.e. 70,500

So the correct answer is (A) 70,500, 69,000, 61,250

3) What was Brand a's total sales turnover for the first and second month in Quarter 4?

(A) £30,000
(B) £28,000
(C) £25,000
(D) £23,000

The information that we need is shown in the table *Previous month's sales turnover and profit* and the graph *Clothing brand sales.*

Step 1 from the table *Previous month's sales turnover and profit* …
…Previous month's sales turnover = 23,000

Step 2 from the graph *Clothing brand sales,* obtain the quarter's sales for Brand a (53000)

Step 3 – calculate the difference
53,000 – 23,000 = 30,000

So the correct Answer is (A) £30,000

4) If the variable costs had been 5% higher for the previous month then what would have been the impact on Brand a's profit?

  (A)   £165 increase
  (B)   £275 decrease
  (C)   £275 increase
  (D)   No affect on profit

The information that we need is shown in *Previous month's sales turnover and profit*. We are told this table gives data for the previous month, which is Quarter 4, month 3.

Step 1
Calculate the 5% increase in variable costs for the previous month.
5,500 x 5/100 = £275

Step 2 – as shown in the table *Previous month's sales turnover and profit* as the variable costs increase so profit decreases by the same amount.

So the correct answer is (B) £275 decrease

5) The sales tax was calculated incorrectly for Quarter 4 (Month 3) and should have been 16.5%. The mistake caused the Net Turnover (Brand a) to be reported as being what?

  (A)   £575 too high
  (B)   £1650 too low
  (C)   16.5% too high
  (D)   £575 too low

The information that we need is shown in the Table; *Previous month's sales turnover and profit*.

Step 1 – calculate the difference in sales tax.
16.5 – 14 = 2.5%

Step 2 – calculate the difference in tax due.
23000 x 2.5/100 = £575

Step 3
The Sales tax is actually higher so the mistake would have made the Net Turnover appear higher than in truth.
So the correct Answer is (A) £575 too high.

Callz Ltd	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	4	38,200	35,000
Internet	4	42,500	40,000
Catalogue	2	43,800	45,000
Telephone	1	55,400	60,000

CF plc	Number of Sales and Support Staff	Monthly Sales Achieved (£)	Monthly Sales Target (£)
High Street	5	38,200	40,000
Internet	4	42,000	45,000
Catalogue	2	47,800	50,000
Telephone	2	64,000	60,000

6. Which operation achieved the highest sales per Sales and Support staff?

(A)   Telephone (CF plc)
(B)   Catalogue (CF plc)
(C)   High Street (CF plc)
(D)   Telephone (Callz Ltd)

The information that we need is shown in the monthly sales figure tables for CF plc and Callz Ltd.

It would take a long time to work out the average sales achieved for each operation across CF plc and Callz Ltd. If you focus on the sales and support staff numbers (compared to the monthly sales achieved) it becomes clear that the highest sales per Sales and Support staff will be either Telephone (Callz Ltd) or Telephone (CF plc). Then, since there is only one sales/support staff member at Callz Ltd (55,400 / 1 = 55,400) this must be higher than CF's (64,000 / 2 = 32,000) **Thus the correct Answer is (D) Telephone (Callz Ltd)**

7. Callz Ltd plans to reduce its staff headcount by two. The remaining staff will be split across an online team and an offline team to a ratio of 1:2. If the online group sales target is £180,000, what is the average target per member of the online team?

    (A)   £50,000
    (B)   £60,000
    (C)   £40,000
    (D)   £35,000

The information that we need is shown in the Callz Ltd table.

Step 1
A simple equation needs to be solved to determine the size of the online team = X
$X + 2X = 11$ (current headcount) – 2 (reduction in headcount) = 9
$3X = 9$, so $X = 3$
i.e. 3 staff members in the online team.

Step 2 – Calculate the new sales target per member of the online team
$180,000 \div 3 = £60,000$

Thus the correct Answer is (B) £60,000

8. Across both companies, which retail operation had the lowest absolute difference between monthly sales and sales target?

    (A)   Internet (Callz Ltd)
    (B)   Catalogue (CF plc)
    (C)   High Street (Callz Ltd)
    (D)   Catalogue (Callz Ltd)

The information that we need is shown in both tables. The calculation for each company is shown in the tables below (with the answer marked in bold);

Callz	
High Street	38200 – 35000 = 3200
Internet	42500 – 40000 = 2500
Catalogue	**43800 – 45000 = -1200**
Telephone	55400 – 60000 = -4600

CF plc

High Street	38200 – 40000 = -1800
Internet	42000 – 45000 = -3000
Catalogue	47800 – 50000 = -2200
Telephone	64000 – 60000 = 4000

Thus the correct Answer is (D) Catalogue (Callz)

9. What is the ratio of CF plc's actual monthly telephone sales to overall monthly CF plc sales?

(A) 1:3
(B) 1:30
(C) 1:4
(D) 1:5

The information that we need is shown in the *CF plc* table.

Step 1 - Calculate total sales = 192,000

Step 2 – Calculate telephone sales as a ratio to total sales
64000:192000
1:3

Thus the correct Answer is (A) 1:3

10. Following a merger, the four retail operations are combined with each other across Callz Ltd and CF plc. The targets are also combined for each retail operation, with 5% added to each target for each staff member that works in the combined retail operation. Which combined retail operation has a sales target of £119,000?

(A)   High Street
(B)   Internet
(C)   Catalogue
(D)   Cannot say

The information that we need is shown in both tables.

Step 1 – calculate the combined sales target per retail operation across the two stores, as follows
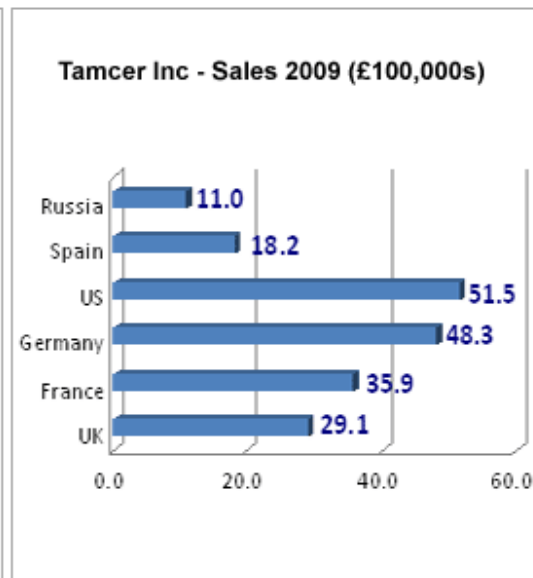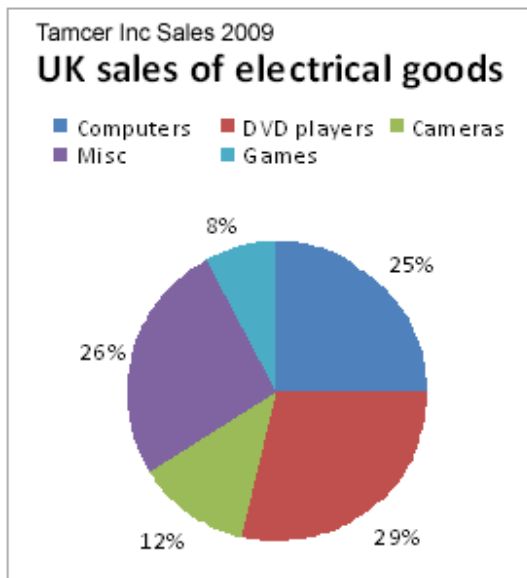High Street = 75,000
Internet = 85,000
Catalogue = 95,000
Telephone = 120,000

Step 2 – calculate the increased sales target based upon the combined number of employees

Retail operation	Combined no. Employees	Increased sales target
High Street	9	75,000 x 145% = £108,750
Internet	8	85,000 x 140% = £119,000
Catalogue	4	95,000 x 120% = £114,000
Telephone	3	120,000 x 115% = £138,00

Thus the correct Answer is (B) Internet

Tamcer Inc Sales 2009
UK sales of electrical goods

■ Computers ■ DVD players ■ Cameras
■ Misc ■ Games

25%
29%
12%
26%
8%

Tamcer Inc - Sales 2009 (£100,000s)

Region	Sales
Russia	11.0
Spain	18.2
US	51.5
Germany	48.3
France	35.9
UK	29.1

11. The US operations exceeded their sales target for 2009 by 25%. If the target was split equally across 4 American regions, what was the individual sales target for each region?

(A) None of these
(B) £1.03 million
(C) £0.58 million
(D) £0.15 million

The information that we need is shown in the bar chart *Tamcer Inc*.

Step 1
US sales = 51.5 (£100,000)
Ignore the £100,000 during the calculation.

Step 2
51.5 / 4 = 12.875 per American region.

Step 3
12.875 represents 125%
Individual regional target = 100 x 12.875 / 125 = 10.3

Step 4
10.3 (£100,000) = £1.03 million

Thus the correct Answer is (B) £1.03 million

12. In 2009, which categories of electrical goods each sold more than £0.75 million in the UK?

   (A) Misc
   (B) Misc, Computers and DVD players
   (C) Misc and DVD players
   (D) Computers and DVD players

The information that we need is shown in the graph and pie chart.

Step 1 – the *Tamcer Inc – Sales 2009* pie chart gives the total UK sales = £2.91 million

Step 2 – the *UK sales of electrical goods* pie chart gives the % sales breakdown for each type of electrical good. Calculate the actual sales for each type of electrical good, as follows;
Computers (25%) = 0.73 million
DVD players (29%) = 0.84 million
Cameras (12%) = 0.03 million
Misc (26%) = 0.76 million
Games (8%) = 0.06 million

Thus the correct Answer is (C) Misc and DVD players

13. Tamcer Inc's Russian business is split into 2 regions: Eastern Region and Western Region. Eastern Region's sales were the equivalent of 300% of the Western Region's sales. What were the Eastern Region's sales?

   (A) £275,000
   (B) £1,275,000
   (C) £825,000
   (D) None of these

The information that we need is shown in the graph *Tamcer Inc*.

Step 1
Russian sales = 11 (£100,000) = £1,100,000

Step 2
Eastern Region sales + Western Region sales = £1,100,000 = 300% + 100%
1% = £1,100,000 / 400 = £2750

Step 3
Eastern Region's sales = 300% = £2750 x 300 = £825,000
Thus the correct Answer is (C) £825,000

14. If the absolute level of computers, games and cameras sold in France mirrors that of the UK, what is the total value of DVD players and Misc electrical goods sold in Tamcer's French operations?

(A) £2,280,500
(B) £1,309,500
(C) £1,909,500
(D) Can't tell from the data

The information that we need is shown in the graph and pie-chart.

Step 1 – Calculate the French sales of computers, games and cameras (using UK figures).
Computers = £727,500
Cameras = £349,200
Games = £232,800
TOTAL = £1,309,500

Step 2 – Calculate the difference between this figure and total electrical goods sold in France
£3,590,000 - £1,309,500 = £2,280,500
Thus the correct Answer is (A) £2,280,500

15. The total worldwide sales for Tamcer Inc. are £29 million. What level of sales is accounted for by countries other than those shown?

(A) £19.6 million
(B) £9.6 million
(C) £10.6 million
(D) £9.4 million

The information that we need is shown in the graph *Tamcer Inc.*

Step 1 - Calculate the total sales shown;
UK	29.1
France	35.9
Germany	48.3
US	51.5
Spain	18.2
Russia	11
TOTAL	= 194

Step 2
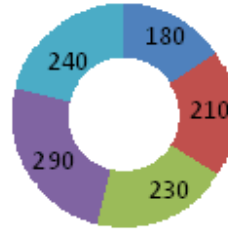194 (£100,000's) = £19.4 million

Step 3
£29 million - £19.4 million = £9.6 million.
Thus the correct Answer is (B) £9.6 million

Number of Female managers
(Jackson and Simpson Co.)

Number of Male managers
(Jackson and Simpson Co.)

■ United Kingdom ■ France ■ Germany ■ United States ■ Spain

JACKSON AND SIMPSON CO. DIRECTOR SALARIES		
Country of Operations	Director Salary average for this year (£)	Budget Increase for next year (%)
United Kingdom	£92,000	4%
France	£94,500	8%
Germany	£118,000	6%
United States	£115,000	6%
Spain	£84,000	5%

16. If instead of being introduced in full next year, the budget salary increases are phased in over the next three years (at a rate of 2% per year), what will be the average United States Director's salary in 2 years time?

(A) £119,646
(B) £121,900
(C) £119,600
(D) £122,000

The information that we need is shown in the table *Jackson and Simpson Co. Director salaries*.

Calculate increases in average Director salary over two years
Year 1 = £115,000 + 2% = 115,000 x 102% = £117,300
Year 2 = £117,300 + 2% = 117,300 x 102% = £119,646

Thus the correct Answer is (A) £119,646

17. Next year the rise in budget for a Spanish Director's average salary will be achieved through two consecutive pay-rises. If the first pay-rise is an increase of 2%, what will the second percentage increase have to be?

(A) 2.5%
(B) 2.6%
(C) 2.9%
(D) 3.0%

The information that we need is shown in the table *Jackson and Simpson Co. Director salaries*.

Step 1 – calculate the Spanish Director salary after the first increase of 2%
£84,000 x 1.02 = £85,680

Step 2 – calculate the budgeted salary for the end of next year (5% increase).
£84,000 x 105% = £88,200

Step 3 – Calculate the percentage increase required to get from 85,680 to 88,200.
88,200 ÷ 85,680 = 1.0294 i.e. an increase of 2.94%.

Thus the correct Answer is (C) 2.9%

18. Directors and managers are allowed to purchase company shares (price = £4.50) in place of salary next year. Which country's average Director can buy the most number of shares, and which country has the most managers who can buy shares?

(A) United States, United States
(B) United States, Germany
(C) Germany, United States
(D) Germany, Germany

The information that we need is shown in the table *Jackson and Simpson Director salaries.*

Step 1 – the question is actually asking you to calculate which country's Directors will be paid the most next year.
So calculate next year's Director salaries for each country.

UK = £92,000 + 4% = £95,680
France = £104,500 + 8% = £112,860
Germany = £118,000 + 6% = £125,080
United States = £115,000 + 6% = £121,900
Spain = £84,000 + 5% = £88,200

Step 2 – calculate the country that has the most managers who can buy shares
This is the country with the largest number of male and female managers
United States = 250 + 290 = 540

Thus the correct Answer is (C) Germany, United States

19. Put the countries in order of decreasing numbers of managers.

(A) United States, Spain, Germany, France, United Kingdom
(B) Spain, United States, Germany, France, United Kingdom
(C) United States, Germany, Spain, United Kingdom, France
(D) United States, Germany, Spain, France, United Kingdom

The information that we need is shown in the two pie charts.

Calculate the total number of male and female managers working in each country, as follows;

United Kingdom = 160 + 180 = 340
France = 175 + 210 = 385
Germany = 245 + 230 = 475
United States = 250 + 290 = 540
Spain = 225 + 240 = 465

Thus the correct Answer is (D) United States, Germany, Spain, France, United Kingdom

20. Which two countries have the same absolute difference in the number of female and male managers?
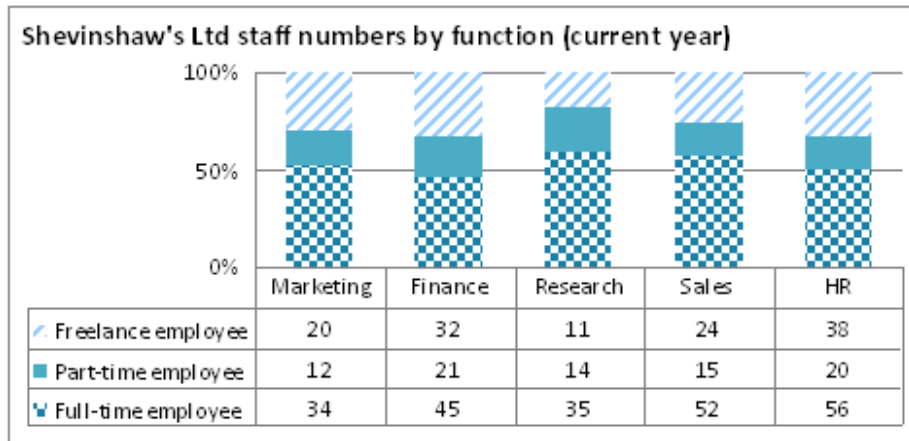
(A) United Kingdom and United States
(B) Germany and Spain
(C) Germany and France
(D) France and Spain

The information that we need is shown in the two pie-charts.

Calculate the difference in female and male managers for each country, as shown in the following table (with the answers marked in bold).

	Female Managers	Male Managers	Difference
United Kingdom	160	180	20
France	175	210	35
Germany	245	230	**15**
United States	250	290	40
Spain	225	240	**15**

Thus the correct Answer is (B) Germany and Spain

Shevinshaw's Ltd staff numbers by function (current year)

	Marketing	Finance	Research	Sales	HR
Freelance employee	20	32	11	24	38
Part-time employee	12	21	14	15	20
Full-time employee	34	45	35	52	56

Shevinshaw's Ltd staff numbers by function

	Previous Year	Projection for Next Year
Marketing	62	76
Finance	104	90
Research	74	72
Sales	82	94
HR	122	96

21. The HR Director at Shevinshaw's Ltd conducts a survey. An eighth of the full-time HR employees state that they would prefer to work part-time. If this occurred and other staff numbers remained the same, what would be the total number of part-time employees for this year?

(A) 37
(B) 89
(C) 27
(D) 56

The information that we need is shown in the graph *Staff numbers by function*.

Step 1 - An eighth of the full-time HR employees = 1/8 x 56 = 7

Step 2
Total part-time workers = previous total part-time employees + 7.
12 + 21 +14 + 15 + 20 (+ 7) = 89.

So the correct Answer is (B) 89

22. Which function is forecast to lose the same number of employees as it lost last year?

(A) None of these
(B) Finance
(C) Research
(D) Sales

The information that we need is shown in both the graph and the table *Shevinshaw's Ltd Staff Numbers by Function*.

Step 1 - The total employee numbers for the current year need to be calculated, as follows (next year's projections are shown in brackets);
Marketing = 20 + 12 + 34 = 66 (76)
Finance = 32 + 21 + 45 = 98 (90)
Research = 11 + 14 + 35 = 60 (72)
Sales = 24 + 15 + 52 = 91 (94)
HR = 38 + 20 + 56 = 114 (96)

Step 2 - Comparing these to the previous year's employee numbers shown in the table, none of the functions is forecast to lose the same number of employees as it lost last year.

So the correct Answer is (A) None of these

23. Which function has the lowest ratio of full-time employees compared to part-time employees and freelance employees combined?

(A) Marketing
(B) Finance
(C) Research
(D) HR

The information that we need is shown in the graph. The calculations for each function are shown in the table below;

	Marketing	Finance	Research	Sales	HR
Step 1 – Full-time employees total	34	45	35	52	56
Step 2 - Part-time and freelance total	32	53	25	39	58
Step 3 **Full-time / Part-time and freelance total**	1.06	0.84	1.4	1.33	0.97

So the correct Answer is (B) Finance

24. Which of the following statements is true?

    (A) Finance has the most employees
    (B) Total Sales employees outnumber total HR
    (C) Research has the most employees
    (D) HR has the most freelance employees

The information that we need is shown in the table attached to the graph.

Go through each option to test if it is true or false. Only the last option is true; HR has the highest number of freelance (38) and full-time employees (56).
So the correct Answer is (D) HR has the highest number of freelance and full-time employees

25. Weekend overtime is paid at a rate of double pay for Marketing and Research employees, with other employees receiving time and a half. Which function will work the second highest number of overtime hours – assuming that each employee works 8 days per year overtime – next year?
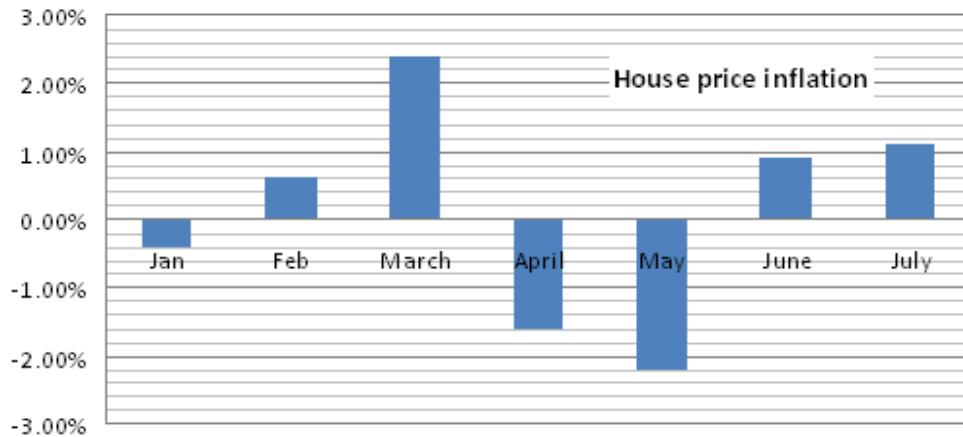
    (A) Research
    (B) Marketing
    (C) Finance
    (D) Sales

The information that we need is shown in the table *Shevinshaw's Ltd Staff Numbers by Function*.

The number of days worked overtime each year is irrelevant since this is the same for each employee. Another distracter in the question is the overtime rate of pay. The question is actually asking for the department with the second highest number of employees. The table below shows the projected staff numbers for next year and the second highest number of employees is shown in bold;

	Projection for next Year
Marketing	76
Finance	90
Research	72
Sales	**94**
HR	96

So the correct Answer is (D) Sales

Property type	Average price (£) — end of June
Studio flat	£140,000
2-bedroom flat	£208,000
3-bedroom flat	£260,000
4-bedroom house	£365,000
5-bedroom house	£450,000

26. In which month shown did house prices change the most, and the least, respectively?

(A) March, May
(B) May, January
(C) May, March
(D) March, January

The information that we need is shown in the graph *House price inflation*.

The most and the least changes in house price are shown by the highest (2.4% in March) and the lowest (0.4% in January) rates of inflation. This question can be done simply by inspection of the graph and is one of the easier questions.

Thus the correct Answer is (D) March, January

27. Which two property prices are in the ratio of 4:5?

(A) 4-bedroom house: 3-bedroom flat
(B) 2-bedroom flat: studio flat
(C) Studio flat: 2-bedroom flat
(D) 2-bedroom flat: 3-bedroom flat

The information that we need is shown in the *Property type* table.
The 4:5 ratio needs to be tested on each of the prices given i.e. what the "other" property price would be if it was 4/5ths of the price (except the lowest price 2-bedroom flat).

2-bedroom flat	£208,000 x 4/5 =	£166,400
3-bedroom flat	£260,000 x 4/5 =	£208,000 = cost of 2-bedroom flat
4-bedroom house	£365,000 x 4/5 =	£292,000
5-bedroom house	£450,000 x 4/5 =	£360,000

Thus the correct Answer is (D) 2-bedroom flat: 3-bedroom flat

28. At the end of June, a property speculator buys three 2-bedroom flats at the average price and rents each one out at £900 profit per month. If she sells the properties eighteen months later with house prices having risen 15% since purchase, how much profit, before costs, has she made?

(A) £140,850
(B) £165,600
(C) £142,200
(D) £48,600

The information that we need is shown in the table *Property type*.

Step 1 – Calculate the increase in property value
£208,000 x 15/100 x 3 = £93,600

Step 2 – Calculate the rental income
£900 x 3 x 18 = £48,600

Step 3 – Calculate the total profit
£93,600 + £48,600 = £142,200
Thus the correct Answer is (C) £142,200

29. If the cost of a 4-bedroom house continues at the same monthly rate of inflation as July, what will the cost be at the end of October?

(A) £385,522
(B) £381,300
(C) £381,327
(D) £381,237

The information that we need is shown in both the graph and the table.
Monthly rate of inflation (July) = 1.1% = Aug, Sept and Oct rate of inflation
Calculate the monthly increase, as follows:
Price (end of June) = £365,000
Price (end of July) = £365,000 x 1.011 = £369,015
Price (end of August) = £369,015 x 1.011 = £373,074
Price (end of Sept) = £373,074 x 1.011 = £377,178
Price (end of Oct) = £377,178 x 1.011 = £381,327

Thus the correct Answer is (C) £381,327

30. If a newly decorated studio flat was worth £141,400 at the start of the year, what was its value at the end of February?

(A) £141,679
(B) £142,000
(C) £140,834
(D) £141,769

The information that we need is shown in both the graph and the table.

Price at the end of Jan = £141,400 - 0.4% = £140,834
Price at the end of Feb = £140,834 +0.6% = £141,679

Thus the correct Answer is (A) £141,679