

Numerical Reasoning Tests

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Recruitment process

When applying for jobs you may come across some if not all of the following stages in the recruitment process:

- Completion of an online application form
- Submission of a CV and cover letter
- Tests (assessing skills appropriate for the job)*
- Interview (face to face, video or telephone)
- Assessment Centre (online/virtual or actual)

* Tests can occur at any stage of the recruitment process

Common assessment tools

- Ability or Aptitude Test
 - Including numerical reasoning, verbal reasoning, non-verbal reasoning
- Personality Questionnaire
 - Less commonly used in recruitment
- Situational Judgement Test (SJT)
 - Usually designed specifically for the needs of the job

Current innovations in recruitment

Some of the large organisations in the UK that recruit students and graduates to internships, placements or graduate schemes are using new methods of assessment during selection e.g.

- Online games & videos mirroring typical work scenarios & requiring decisions. *These may include maths calculations.*
- Video interviews recorded online by the applicants & reviewed by the recruiter.

Ability Tests

- Measure a specific ability or abilities required for a job
- Often bought from specialist companies

Examples:

- numerical reasoning
- verbal reasoning
- non-verbal reasoning (diagrammatical, inductive, logical)
- critical thinking

Numerical Reasoning Tests

- These tests are usually online and have a time limit.
- Some numerical tests do not have a time limit for the test as a whole, but each question is timed, e.g. <https://www.trytalentq.com/>
- Maths skills tested may include calculation of percentages, fractions and ratios
- Questions in numerical reasoning tests often require interpretation of data in tables or graphs

Numerical Reasoning Practice Questions

- The examples on the following slides have been taken, with permission, from a practice test on the Assessment Day website www.assessmentday.co.uk
- They are typical of many numerical reasoning tests:
 - providing information in different formats
 - multiple choice answers

Which share had the largest difference between highest and lowest price over the last 12 months?

Share Prices

Company	Today's price	Change from previous day	Past 12 months Max price	Past 12 months Min price
Huver Co	1,150	1.10	1,360	860
Drebs Ltd	18	.50	22	11
Fevs plc	1,586	−9.00	1,955	1,242
Fauvers	507	−1.00	724	464
Steapars	2.537	1.00	2,630	2,216

Dividend per share (euro)	Huver Co	Drebs Ltd	Fevs plc	Fauvers	Steapars
Interim dividend	0.83	0.44	0.34	0.09	0.48
Final dividend	1.75	1.12	1.25	0.32	0.96

Note: the total annual dividend paid per share is the sum of the interim dividend and the final dividend

- a) Huver Co b) Drebs Ltd c) Fevs plc d) Fauvers e)Steapars

Source: www.assessmentday.co.uk

Which share had the largest difference between highest and lowest price over the last 12 months? - ANSWER

- The information needed is in this table:

Company	Today's price	Change from previous day	Past 12 months Max price	Past 12 months Min price
Huver Co	1,150	1.10	1,360	860
Drebs Ltd	18	.50	22	11
Fevs plc	1,586	-9.00	1,955	1,242
Fauvers	507	-1.00	724	464
Steapars	2,537	1.00	2,630	2,216

- Calculate the difference between the maximum & minimum prices:

Huver Co: $1,360 - 860 = 500$

Drebs Ltd: $22 - 11 = 11$

Fevs plc: $1,955 - 1,242 = 713$

Fauvers: $724 - 464 = 260$

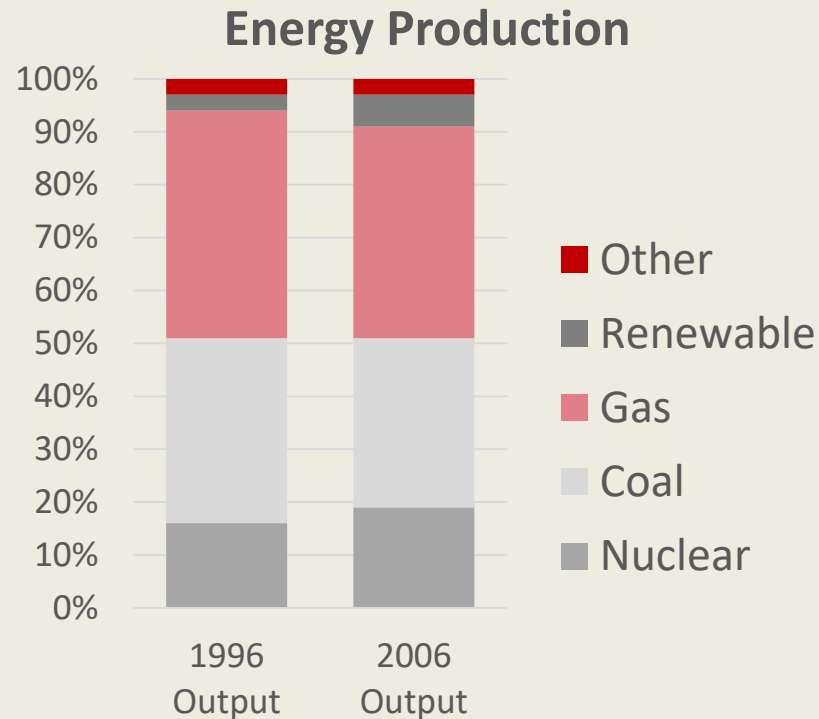
Steapars: $2,630 - 2,216 = 414$

Tip: Notice the wording of the question asks for the share with the largest absolute change in price, NOT the largest percentage change, which would have been Drebs Ltd. If percentage change was needed, the word 'percentage' would be in the question.

Thus the correct answer is **c) Fevs plc**

Source: www.assessmentday.co.uk

In 1996, total output from all fuels was 200TWh. If output for Nuclear in 2006 was twice that for Coal in 1996, what was the output for Nuclear in 2006?



a) 140TWh

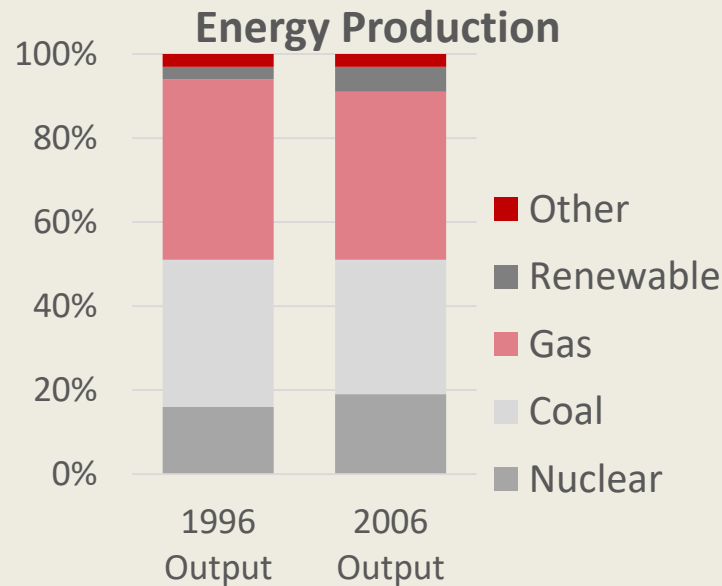
b) 400TWh

c) 64TWh

d) 96TWh

Source: www.assessmentday.co.uk

In 1996, total output from all fuels was 200TWh. If output for Nuclear in 2006 was twice that for Coal in 1996, what was the output for Nuclear in 2006? - ANSWER



- We are told that the total output from all fuels in 1996 is 200TWh, so we can work out what it was for coal in 1996.
- Coal in 1996 was 35% of 200TWh: 70TWh.
- So Nuclear in 2006 is twice this: 140TWh.

Thus the correct answer is **a) 140TWh**.

Source: www.assessmentday.co.uk

What was the average accident cost per vehicle on the road in Ribley in November?

Town		Aug	Sep	Oct	Nov	Average Cost per Accident (£)
Ribley	Number of Accidents	8	6	12	10	1,900
	Vehicles on Road	85,000	76,000	79,000	81,000	
Wartop	Number of Accidents	14	18	4	20	3,200
	Vehicles on Road	112,000	101,000	89,000	117,000	
Surren	Number of Accidents	6	20	9	21	1,050
	Vehicles on Road	96,000	104,000	119,000	125,000	

a) £0.23

b) £0.47

c) £15.40

d) £2.30

Source: www.assessmentday.co.uk

What was the average accident cost per vehicle on the road in Ribley in November? - ANSWER

Town		Aug	Sep	Oct	Nov	Average Cost per Accident (£)
Ribley	Number of Accidents	8	6	12	10	1,900
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Average accident cost per vehicle on road

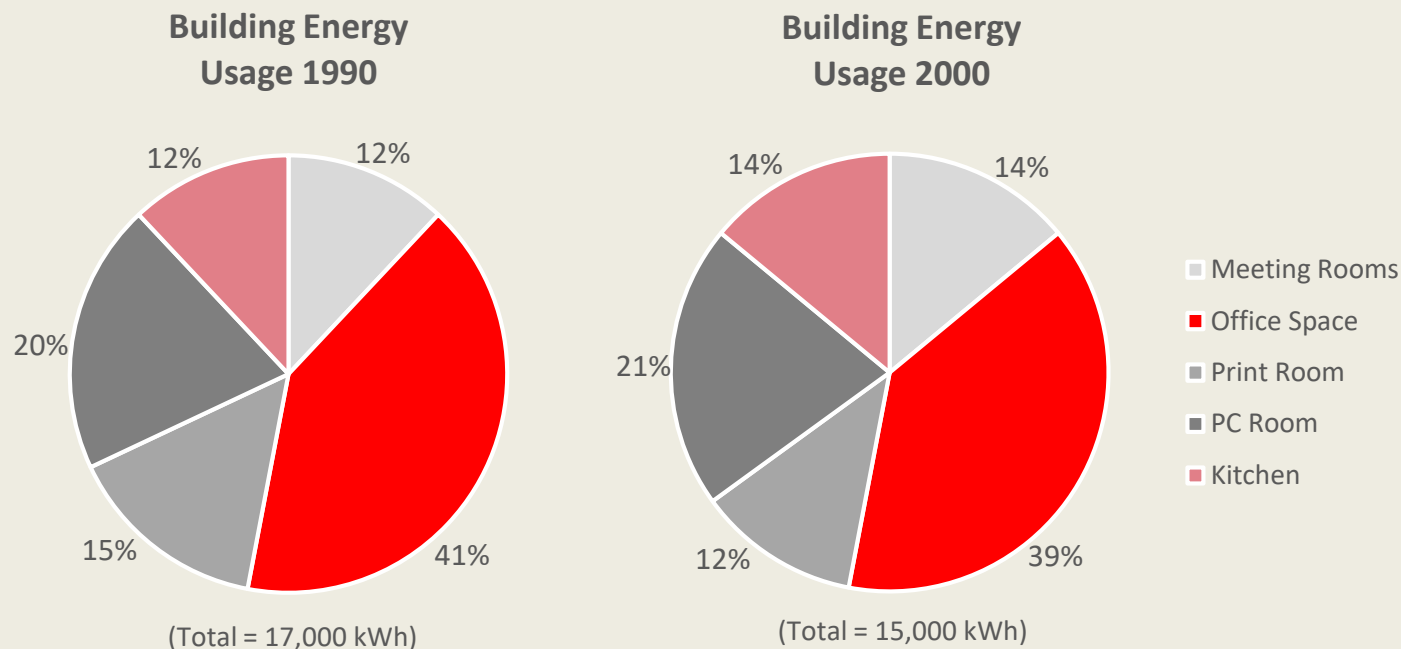
= Total average cost of accidents ÷ Total number of vehicles on road

- Total average cost of accidents in Ribley in November = $10 \times £1,900 = £19,000$.
- Number of vehicles on road = 81,000.
- So the average accident cost per vehicle on the road = $£19,000 \div 81,000 = £0.2346$.

Thus the correct answer is a) £0.23.

Source: www.assessmentday.co.uk

If the Building Energy Use today is 6% less than it was in 2000, by what percentage is today's Building Energy Use lower than that of 1990?



a) 82.9%

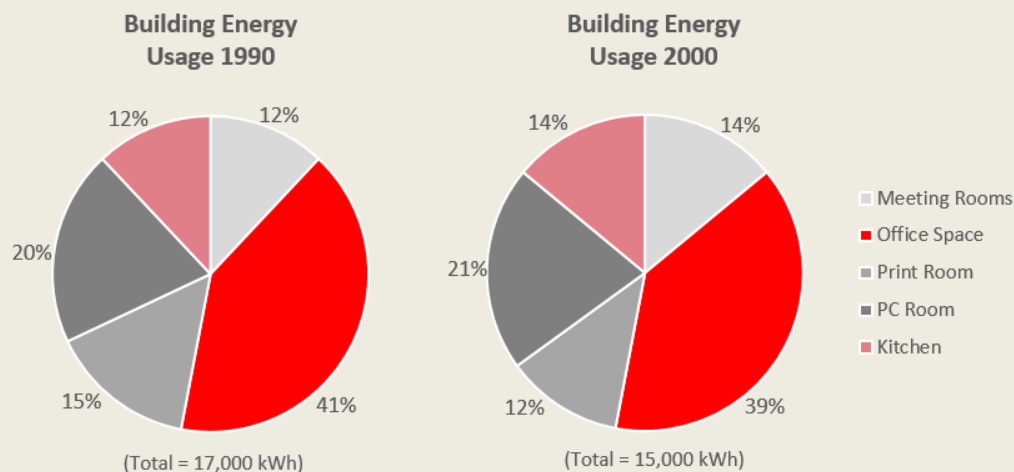
b) 17.1%

c) 17.8%

d) Cannot say

Source: www.assessmentday.co.uk

If the Building Energy Use today is 6% less than it was in 2000, by what percentage is today's Building Energy Use lower than that of 1990? - ANSWER



- Total energy usage in 2000 = 15,000kWh, so today's at 6% less is $0.94 \times 15,000 = 14,100\text{kWh}$. This compares with 1990 levels of 17,000kWh.
- To work out the reduction from 17,000 to 14,100, calculate $\frac{17,000 - 14,100}{17,000} \times 100\% = 17.1\%$

Thus the correct answer is **b) 17.1%**.

Source: www.assessmentday.co.uk

Preparing for tests

- Research the type of test you may have to take
 - Try an appropriate practice test
 - Identify any weaknesses & address them
 - Take a practice test again
 - Have you improved?

Preparing for tests – Research

- Look at employers' websites to see the type of tests they use, e.g. numerical reasoning.
- The website may also have example questions and tell you whose tests they use.
- Look at websites like Glassdoor or Wikijobs for feedback from others who have already applied to the same employer.

Preparing for tests – Practise

- When you know the type of test you may face, get some practice first, e.g. the tests on the Assessment Day or Graduates First websites.
- If you know which test producer the employer uses, see if there are example questions on the producer's website. Many of these are listed later in this presentation.

Preparing for tests – Identify weaknesses

- Trying one or more practice tests should help you to identify areas that you may need to refresh or develop, e.g. ratios, fractions, percentages.
- You should also be able to identify if you work quickly enough or if you have problems with accuracy, e.g. working quickly but not checking your answers.

Preparing for tests – Address weaknesses

- Revise any weak areas in your maths skills. Useful resources are listed later in this presentation.
- Take more tests to practise improving your speed or to practise taking more care with your answers.
- With some tests, it is not always necessary to answer all of the questions to do well. You just need to get enough answers correct.

Preparing for tests – Review

- When you have worked on your weaknesses, try a practice test again, e.g. Assessment Day, Graduates First or examples on test producers' websites.
- If you have not improved, try the previous steps again and contact your university careers service for help and advice.

Numerical Reasoning Practice Test

https://www.assessmentday.co.uk/aptitudetests_numerical.htm

Practice Tests Offered by Test Producers

CEB Gartner (SHL)

<https://www.cebglobal.com/shldirect/en/practice-tests>

Cubiks

<https://practicetests.cubiks.com/>

Talentlens (Pearson)

<https://www.talentlens.co.uk/practice-aptitude>

Saville Assessment

<https://www.savilleassessment.com/PracticeTests>

TalentQ

<https://www.trytalentq.com/>

Capp

<http://practice.cappassessments.com/>

You may have to
register & create a
password before
taking a practice
test

Help with improving your maths skills

- Find out if your university has a maths support service
- Online courses and resources, e.g.
<https://www.futurelearn.com/courses/numeracy-skills>

Online help with improving your Maths skills

<http://www.mathcentre.ac.uk/>

<http://www.statstutor.ac.uk/>

<https://www.khanacademy.org/>

<http://www.mathcentre.ac.uk:8081/mathseg/>

<http://www.wolframalpha.com/>

<https://www.intmath.com/>

<http://www.cse.salford.ac.uk/physics/gsmcdonald/hFLAPM.php>

Help with understanding tests

Ask your university careers service what help and support you can get. They may offer some or all of the following:

- Information about taking tests on their websites
- Opportunities to practise tests and receive feedback
- Discussion with an adviser to address your concerns
- Links to websites with practice tests

Thank you

Any questions ???