



BMAT Past Paper Worked Explanations

Section 1, Aptitude and Skills (2010)

1) Correct answer is A (25)

		BMI																						
		13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35
Height (cm)	144	26	29	31	33	35	37	39	41	43	45	47	49	51	53	55	58	60	62	64	66	68	70	72
	147	28	30	32	34	36	38	41	43	45	47	49	51	54	56	58	60	62	64	66	69	71	73	75
	150	29	31	33	35	38	40	42	45	47	49	51	54	56	58	60	63	65	67	69	72	74	76	78
	153	30	32	35	37	39	42	44	46	49	51	53	56	58	60	63	65	67	70	72	74	77	79	81
	156	31	34	36	38	41	43	46	48	51	53	55	58	60	63	65	68	70	73	75	77	80	82	85
	159	32	35	37	40	42	45	48	50	53	55	58	60	63	65	68	70	73	75	78	80	83	85	88
	162	34	36	39	41	44	47	49	52	55	57	60	62	65	68	70	73	76	78	81	83	86	89	91
	165	35	38	40	43	46	49	51	54	57	59	62	65	68	70	73	76	78	81	84	87	89	92	95
		Weight (kg)																						

To work out Alex's BMI, we need to know his height and weight. His height is given to us in the question as 162cm. His weight must be calculated from the information in the text. Using the table, if Jay has a BMI of 22 and a height of 150cm, his weight must be 49kg (3rd row, highlighted in grey). Similarly we can deduce Charlie's weight to be 58kg (5th row, highlighted in grey). If Charlie, Jay and Alex's weights total to 172, then Alex's weight must be 172-58-49=65kg. Using the table, a height of 162cm and weight of 65kg gives us Alex's BMI at 25, therefore the answer is A.

2) Correct answer is C (A strong economy may be a precondition of a flourishing arts sector).

This argument assumes that because successful societies have a flourishing arts sector, the flourishing arts sector must have CAUSED the success of that society, and so increasing provision of the arts would make a society more successful. This is not necessarily the case and hence represents a flaw in the argument. In fact, the success of the society may have caused the arts sector to flourish, which is highlighted in option C making it the correct answer as it draws upon the flaw above. All of the other options may provide a case against subsidising the arts, but do not directly refute the inherent reasoning of the argument and so cannot be correct.

3) Correct answer is C (Erin)

The white diamond is the 8th diamond along the x axis and so represents the 8th lowest (or 5th highest) score in test 1. The white diamond is also the 8th diamond along the y axis and so represents the 8th lowest (or 5th highest) score in test 2. The 5th highest score in test 1 is Erin's and to double check this, his score is also the 5th highest in test 1 so Erin is represented by the white diamond making the answer C.

4) Correct answer is C (Action to deal with global warming should include tackling spam as one of the strategies).

A) This is too general a conclusion to draw from the argument, as the argument relates specifically to spam and not all problems.

- B) This is incorrect as the argument makes no indication towards the relative priorities of tackling spam as opposed to congestion.
- C) This is the correct answer as there are claims in the passage that spam contributes to global warming and that tackling spam can reduce CO₂ production by spam emails, so this conclusion is directly supported by the text.
- D) This is incorrect as the passage states that merely filtering spam does little to reduce the energy cost of sending out spam emails in the first place.
- E) This is incorrect as no comment about this is made in the text.

5) Correct answer is D (5:55pm)

72 cakes need to be made in 6 batches ($72/12=6$). Each batch takes 70 mins to make (40 mins preparing + 25 mins in the oven + 5 mins cooling). Assuming one cannot cool and prepare cakes simultaneously, 25 mins are saved on each as preparation can begin whilst the previous batch is in the oven. This time is not saved on batch 1 as there is no previous batch in the oven when preparing batch 1. Therefore the total cooking time for 6 batches is 420 mins ($6*70$) minus 125 mins saved during the baking of the last 5 batches ($5*25$), which totals to 295 mins, or 4 hours 55 mins. This gives us an answer of D which is 4 hours 55 mins after 1pm.

6) Correct answer is B (2 only)

1) **Does not** represent a weakness as the argument is constructed using the reasoning that IF we stopped burning all fossil fuels then climate change would still not be averted. Therefore even if we did not stop burning ALL fossil fuels, climate change would again, still not be averted.

2) **Does** represent a weakness in the argument as if we could reduce CO₂ levels in ways other than stopping the burning of fossil fuels and relying on the absorption of CO₂ by oceans, then this may allow us to 'avoid the disastrous consequences of climate change' thus disproving the conclusion even though all the calculations in the model may still be correct.

3) **Does not** represent a weakness in the argument as past predictions do not necessarily have an influence over the rigidity of this particular model.

7) Correct answer is B (2)

The darts scores are only between 002 and 501 therefore the first digit can only ever be a 0,1,2,3,4 or 5, but cannot be a 5 in this case as then the score would be 505 which is greater than 501. Three of the lights in the first digit are permanently on; therefore we must go through all the digits 0-4 and determine whether they can be made from the digit 8 using up to 3 lights less than the digit 8 does. The digit zero is 8 without the centre light, so the first digit could have been zero. The digit 1 requires a light in the second row, second column, which is not present in the digit 8, so 1 could not have been the true first digit. The digit 2 is similar to the digit 8, but without the use of two lights in the 2nd and 4th row, so the true first digit may have been 2. The digit 3 requires more than 3 lights to be converted into an 8, so cannot have been the true first digit (4 lights are required). The digit 4 has a light in the 2nd row, 2nd column which is not present in the digit 8 and so the true first digit cannot

be 4. Therefore the first digit can only be 0 or 2, so the true score is either 005 or 205 and there are only these two possibilities, hence the answer is B.

8) Correct answer is A (That toy preference in humans is the result of socialising).

Options B and C are **supported**, not challenged by the first paragraph, and so cannot be correct. Option D is challenged to an extent, but option A is challenged more clearly and directly by the text, as toy preference is indicated to have a biological, as opposed to social, origin. Option D is an over-interpretation of this challenge as toy preference cannot be extended to all animal behaviour.

9) Correct answer is A (The more aggressive sex monopolised the toys that were the most attractive to the monkeys).

- A) This is the correct answer as it indicates that toys preferences may be sex-independent but that the most attractive toys happened to be those considered most traditionally to be masculine and therefore were monopolised by the more aggressive males.
- B) This is incorrect as it makes no challenge to the idea that male monkeys might **choose** certain toys that females would not, regardless of how long those monkeys spent with the toys once chosen.
- C) This is incorrect as it **supports** rather than challenges the inference of sex dependent preferences.
- D) This is incorrect as the inference relates specifically to vervet monkeys and option D does not directly challenge this **monkey-specific** inference.
- E) This is incorrect as it has no relevance to the inference at hand.

10) Correct answer is A (Spending time with an object is a reliable indicator of interest).

*An assumption is an **unstated** fact that must be true for a claim to be true:*

- A) This is the correct answer as it **must** be true for us to accept that monkeys which spent longer with a toy preferred that toy more.
- B) This is incorrect as the claim that vervet monkeys exhibited sex dependent preference may still be true regardless of the nature of human toy preference.
- C) This is incorrect as the claim that female vervet monkeys preferred pots and dolls may still be true regardless of the wider implications that pots and dolls have in society.
- D) This is incorrect as if D was assumed the claim in paragraph two would have had to have been **rejected** as opposed to accepted.
- E) This is incorrect as it is not an assumption and, if true, would have contradicted the claim in paragraph 2.

11) Correct answer is D (neither 1 nor 2)

We cannot assume from the photograph alone that all or even most, monkeys respond, without being coerced, in the same ways as humans would to a toy car. The monkeys may have been forced or 'gently encouraged' to interact in such a way with the toys pictured. Therefore both 1 and 2 cannot reliably be inferred and the answer is D.

12) Correct answer is C

The following table outlines the numbers of each type of square in each type of tile.

Type of Square	Tile				
	A	B	C	D	E
Black	2	1	3	4	5
Grey	4	2	2	2	4
White	3	6	4	3	0

4 out of these 5 tiles must be selected for the floor pattern, and the total number of grey, black and white squares respectively must be the same when adding the figures in the table for these 4 tiles. C cannot be part of the pattern as adding the figures for black, grey and white for tiles A, B, D and E gives us a total of 12 for each colour. The totals obtained when adding up the number for any other combination of 4 tiles are not equal therefore the answer must be C.

13) Correct answer is E (The fact that a negative story is inevitable does not mean that it should be ignored).

An argumentative flaw, if present, must challenge the reasoning of the passage such that even if all the claims in the passage are true, the conclusion would still not necessarily follow on from these claims. B does not satisfy these criteria and so is incorrect. A is incorrect as even if a third option of 'neutral' exam results was included, the reasoning would still be flawed. C or D might be true but again, even if these predictions were supported by evidence, or exams were becoming easier, the reasoning would still be flawed and therefore C or D are not the best answer. E is the correct answer as it highlights a problem with the reasoning of the argument as opposed to merely one of the claims in the argument.

14) Correct answer is D (6)

This question must be answered by working through the potential answer choices from the bottom upwards. There are seven elements in the display so, for the answer to be 7, all 7 elements must change from one number to another. This is impossible as all 10 possible digits share an element (bottom right) meaning this element must be kept constant, except the digit 2, but this does not require more than 7 element changes to transform into any of the other digits. The next potential answer is 6 - changing from digit 1 to digit 6 requires changing 6 of the 7 elements (all but the bottom right) and hence the answer is D.

15) Correct answer is D (Boys are more than twice as likely as girls to be killed or seriously injured as pedestrians or cyclists).

A cannot reliably be inferred from the passage as boys may just be more accident prone as cyclists; equally C cannot reliably be inferred either for the same reasons. B also cannot be reliably inferred as there may be merely more boy pedestrians than girls. E also cannot be inferred as no information

pertaining to the likely success rates of road safety lessons has been provided. D is the only option that can be objectively justified using only the data in the passage and no additional information.

16) Correct answer is D

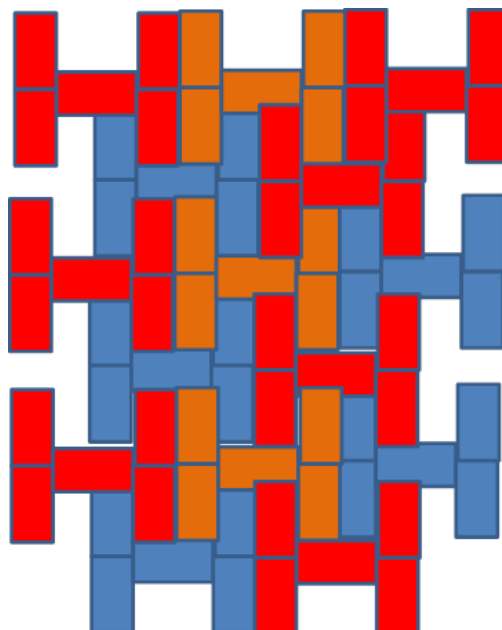
The die could be rotated 90 degrees anticlockwise in the vertical plane (so that 3 now occupies the top face of the die) leaving the remaining faces as 5 (in the same position) and 1 (where 3 previously was). A subsequent 90 degree rotation to the left (anticlockwise) would move the 1 to the left face (where the 5 previously was), keep 3 on the top face, and move a 2 to the right face (where the 1 previously was) as illustrated in option D.

17) Correct answer is C (Because one museum overseas is looted it does not mean that others will be).

An argumentative flaw, if present, must challenge the reasoning of the passage such that even if all the claims in the passage are true, the conclusion would still not necessarily follow on from these claims. Of all the possible options, only C and E challenge the reasoning of the passage, the remaining options challenge claims or make assertions. C challenges the central idea that protecting an artefact from looting is not necessarily the primary interest for the world and so represents a flaw in the entire argument. E challenges the safety of the British museum but C is a more complete flaw as even if all the artefacts were safe C would still be valid.

18) Correct answer is D (15)

This is a challenging question which requires a visualisation of the tessellation of the letter H as indicated in the diagram below. In this diagram, each small rectangle has dimensions 2cm by 4cm. A maximum of 2-3 H's can fit horizontally on each row of the 24cm card and there are 6 rows that can fit on a column of the 33cm card. Therefore there are a total of 15 shapes, making the answer D.



19) Correct answer is 217 million

According to the text, in 2005, 'the total number of passengers at UK airports' was 228 million. Additionally, '9 in 10 air passengers at UK airports in 2005 were travelling internationally.' Since the remaining 1 in 10 passengers are domestic and have hence been counted twice, to answer the question we must amend the figures to only count these domestic passengers once. 10% of 228 million is 22.8 million (the number of domestic passengers counted in 2005). Half of this figure represents the true number of domestic passengers (11.4 million). Taking this away from 228 million gives us 216.6 million, or to the nearest million, 217 million.

20) Correct answer is C (9 million)

- There were 34 million passenger movements between the UK and Spain in 2005. Each of these 'movements' would encompass one passenger counted at a UK airport.
- 228 million passengers were counted at UK airports in 2005, most of whom would each represent a single passenger movement.
- 34 is roughly 15% of 228. Looking at the graph, we can see that in 1980, there were roughly 60 million passengers. 15% of this is 9 million; therefore C is the correct answer.

21) Correct answer is F (1,2 and 3)

Between 1980 and 2005 (i.e. over 25 years) the number of passengers increased by roughly 160 million (from roughly 60 million to 228 million) giving an increase of roughly 6.5 million per year. Between 1955 and 1980 (also over 25 years) the number of passengers increased by 55 million from 5 million to 60 million, giving an increase of just over 2 million per year, which is less than one third of 6.5 million per year. Therefore statement 1 is correct. Heathrow and Gatwick count for a total of 101 million (68+33) passengers out of the 228 million in the UK. This represents a proportion of over 40% of UK passengers at Heathrow/Gatwick. Therefore statement 2 is also correct. There were 228 million passengers in 2005 and 500 million are predicted for 2030, suggesting an increase of roughly 270 million passengers over 25 years, which is over 10 million passengers per year. Therefore statement 3 is also correct and since all 3 statements are correct the answer is F.

22) Correct answer is D (The data have been correctly interpreted and do support the conclusion).

The data has been correctly interpreted as on analysis, it is apparent that both dips in passenger numbers in the 1990's and 2001 were more than recovered as current passenger numbers exceed these troughs. This suggests that future dips may also recover, making the answer D. Although the previous data is no guarantee of the future, the text states that the 2009 dip will '**not necessarily**' prevent a strong recovery. This statement can thus be justified as it allows for uncertainty.

23) Correct answer is E (12/35)

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
1	1,1	1,2	1,3	1,4	1,5	1,6	1,7	1,8	1,9	1,10	1,11	1,12	1,13	1,14	1,15
2	2,1	2,2	2,3	2,4	2,5	2,6	2,7	2,8	2,9	2,10	2,11	2,12	2,13	2,14	2,15
3	3,1	3,2	3,3	3,4	3,5	3,6	3,7	3,8	3,9	3,10	3,11	3,12	3,13	3,14	3,15
4	4,1	4,2	4,3	4,4	4,5	4,6	4,7	4,8	4,9	4,10	4,11	4,12	4,13	4,14	4,15
5	5,1	5,2	5,3	5,4	5,5	5,6	5,7	5,8	5,9	5,10	5,11	5,12	5,13	5,14	5,15
6	6,1	6,2	6,3	6,4	6,5	6,6	6,7	6,8	6,9	6,10	6,11	6,12	6,13	6,14	6,15
7	7,1	7,2	7,3	7,4	7,5	7,6	7,7	7,8	7,9	7,10	7,11	7,12	7,13	7,14	7,15
8	8,1	8,2	8,3	8,4	8,5	8,6	8,7	8,8	8,9	8,10	8,11	8,12	8,13	8,14	8,15
9	9,1	9,2	9,3	9,4	9,5	9,6	9,7	9,8	9,9	9,10	9,11	9,12	9,13	9,14	9,15
10	10,1	10,2	10,3	10,4	10,5	10,6	10,7	10,8	10,9	10,10	10,11	10,12	10,13	10,14	10,15
11	11,1	11,2	11,3	11,4	11,5	11,6	11,7	11,8	11,9	11,10	11,11	11,12	11,13	11,14	11,15
12	12,1	12,2	12,3	12,4	12,5	12,6	12,7	12,8	12,9	12,10	12,11	12,12	12,13	12,14	12,15
13	13,1	13,2	13,3	13,4	13,5	13,6	13,7	13,8	13,9	13,10	13,11	13,12	13,13	13,14	13,15
14	14,1	14,2	14,3	14,4	14,5	14,6	14,7	14,8	14,9	14,10	14,11	14,12	14,13	14,14	14,15
15	15,1	15,2	15,3	15,4	15,5	15,6	15,7	15,8	15,9	15,10	15,11	15,12	15,13	15,14	15,15

The table above illustrates the potential draw combinations with the first drawn number represented by the left hand column options and the second drawn number represented by the top row options. The combinations which satisfy the criteria outlined in the question are highlighted in bold, with some notable exceptions as shown. The total number of possible combinations is 210 (15*15-15) as the same number cannot be chosen twice, of which 72 are acceptable. $72/210 = 12/35$, therefore E is the correct choice.

24) Correct answer is C

*An assumption is an **unstated** fact that must be true for the conclusion to be justified:*

- A) This is incorrect as whether volcanic activity caused additional fires or not would make no difference to the argument at hand as acid rain was not observed regardless.
- B) Incorrect as the cooling of the atmosphere is stated to have been **caused** by volcanic activity and so volcanic activity would indirectly be the cause of any atmospheric cooling related extinction. Both of the options above do not have a significant influence on the conclusion.
- C) This is the correct answer as if C was not assumed the underlying argument would be invalid.
- D) This is incorrect for a similar reason to B.
- E) This is incorrect as this is not indicated in any way – the word ‘always’ is too prescriptive.

25) Correct answer is A (14)

Currently, I have a score of 9, placing me in last place behind score of 22, 13 and 11. I could switch my 7 of hearts for an 8 of spades, giving me a total score of 20 (as it is doubled because I have the same suit) but this would only propel me to 2nd place. Instead if I exchange my 2 of spades for a 7 of

diamonds, I will have a score of 14 and will be in first place, as the previous winner will now only have a score of 6. Therefore the answer is A.

26) Correct answer is A

A is the correct answer as it is indicated by the 4th and 5th lines of the passage. B and E are incorrect as nowhere in the passage is there an indication that the burden of the solution should fall specifically on 'doctors'. C is incorrect as although true, it is merely an intermediate conclusion that supports the main conclusion which is A, making A a better choice than C. D is incorrect as it represents a reason which supports the main conclusion of A.

27) Correct answer is C (9)

If Phil hits the same number twice he cannot win. Therefore he cannot aim at 3,12,1,10,8 and 2 as there is a risk of scoring the same number twice. Considering the worst case scenario for the remaining options, if he were to hit 1 with his 3rd dart, he would need a minimum score of 9 with his last dart to total at least 30. There is no target that guarantees a score of at least nine so he cannot aim for 4 as there is a risk of hitting 1. Similarly he cannot aim at 11 as there is a risk of hitting 2, in which case he could not guarantee a score of at least 8 with his last dart. Aiming at 7 means he might hit 3, and would thus need a minimum of 7 on his last dart, which can also not be guaranteed. Therefore, by process of elimination, if he were to aim at 9 he could hit 4 by mistake, but would need a minimum of 6 on his last dart which is guaranteed by aiming for 6 and so can be confident of winning a prize. Therefore the answer is C.

28) Correct answer is A (1 only)

Statement 1 would strengthen the conclusion of the argument which states that 'the name **alone** had influenced public opinion' and that this influence was not guided merely by false reporting of the case. Statement 2 would weaken the argument as it would indicate that the media influence was not due merely to the name **alone** but also due to the recommendation for the harshest possible punishment to readers, and that this unduly influenced their thoughts. Statement 3 would also weaken the argument for similar reasons – that the influence was not due to the name **alone** but also due to subjective language.

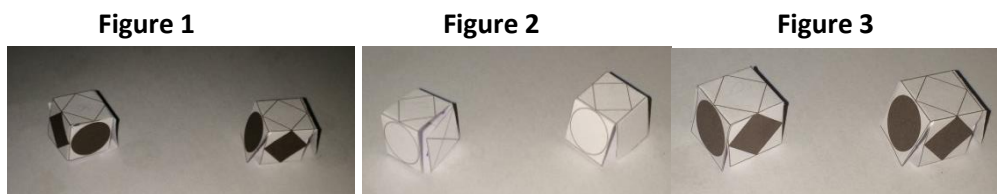
29) Correct answer is C (188g)

The average apple weight in a pack needs to be close to 200g. Taking 200g away from all the apples gives us easier figures to work with, i.e. weights of -27, -18, -12, -3, 7, 19 and 24g respectively. This makes it easier to see the appropriate combinations of 24, -3 and -18 (summing 3) and -27, 19 and 7 (summing -1) which are both within the allowance of + or - 3 from the total. Therefore the apple which is -12g away from 200 is left, i.e. option C.

30) Correct answer is B (Expensive schemes aimed at improving education cannot be justified)

The passage expresses the importance of good teachers and highlights that this would be contraindicated by hiring candidates with lower qualifications, thus making the assumption in A necessary. B is not assumed as the passage only indicates that the expensive teaching scheme was unjustified because the results were poor, not unjustified by virtue of its cost alone. C needs to be assumed to indicate that the poor improvement of California from 49th to 48th was due to a lack of improvement in **absolute** and not just **relative** quality. D is also assumed as the final sentence indicates a causal relationship between bright teachers and doing 'well at school' which can be taken as an improvement of 'pupil's performance'. Therefore the correct answer is B.

31) Correct answer is D



The 3D assembly of the cube nets pictured in the passage have been illustrated above. Figure 1 shows the net provided at the start of the question on the right and a representation of net A on the left. The positions of the black square and black circle have been switched for net A so this cannot be the correct net. The same issue is also present for nets C and E and so they too are not the correct nets. Figure 2 shows a representation of net B on the left and the desired net on the right. Here the position of the white circle and the X shape have been switched so net B is not the correct net either. Figure 3 shows net D and the desired net which assemble to form identical cubes.

32) Correct answer is C (6:1)

It is initially necessary to add up the average incomes of the top 2 10% blocks and compare them to the bottom two. This means finding the ratio between roughly 212,600 (162,029+50,656) and 33,500 (16,203+17,338) which is close to 6:1, making the answer C. A quick way to see this is approximating the figures to 210,000 and 30,000 which is clearly 7:1. C is the closest option to this.

33) Correct answer is C (40%)

This question requires some long division and approximation: $162/400 = 40\%$

34) Correct answer is C (\$21,500)

Suppose the population consisted of merely 10 people, so each person represented an 'average' 10% bracket in totality. Taxing the top two people would yield 20% of \$212,685, or \$42,537. This figure would then be distributed amongst the remaining 8 people, so that they each get $42,537/8$, or \$5,317 each. Thus the bottom earner would earn $16,203 + 5,317$, or \$21,520, making the answer C.

35) Correct answer is B (2 only)

The graphs show data points for separate countries, so no comparison can be made as to the situation **within** any given country, only **between** countries. Therefore statement 1 cannot be concluded. The first graph shows a strong negative correlation between income inequality and health, such that less inequality (which is reflected in 'variability') corresponds with increased health.