MathsMind 2012
Year 10

Question 1

Jim wanted to have a party. He has 5 close friends. Each of these 5 friends had 4 close friends. Each of those 4 friends had 3 friends. Each of the 3 friends had 2 friends and each of the two friends had 1 friend. If they all showed up, how many people were at the party?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 2

On a little trip through town, the mother duck lost two thirds of her baby chicks. Later, on the way back, she found four fifths of her lost chicks. What fraction of her original brood did she then have?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 3

Which is the smallest number which, when divided by 2, 3, 4, 5 and 6 will give 1, 2, 3, 4 and 5 as remainders, respectively?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 4

In a cricket game, a single is one run, a 'boundary' is 4 runs and a 'six' is 6 runs. Brendan McCullum scored 236 runs. He scored 38 runs in singles, and three times as many 'boundaries' as 'sixes'. How many boundaries did he score?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 5

In English Premier Football, the top 6 teams are shown. Manchester City Played 27 games, won 21, drew 3, lost 3 and scored 66 points. (You may ignore GF, GA, GD).

POS		LP	CLUB	P	W	D	L	GF	GA	GD	PTS
1	▬	(1)	Manchester City	27	21	3	3	69	19	50	66
2	▬	(2)	Manchester United	27	20	4	3	66	27	39	64
3	▬	(3)	Tottenham Hotspur	27	16	5	6	52	33	19	53
4	▬	(4)	Arsenal	27	15	4	8	55	38	17	49
5	▬	(5)	Chelsea	27	13	7	7	47	32	15	46
6	▬	(6)	Newcastle United	27	12	8	7	39	39	0	44

If Manchester City had lost 4 more games and drawn 2 more games of the 27 games, how many points would they have scored?
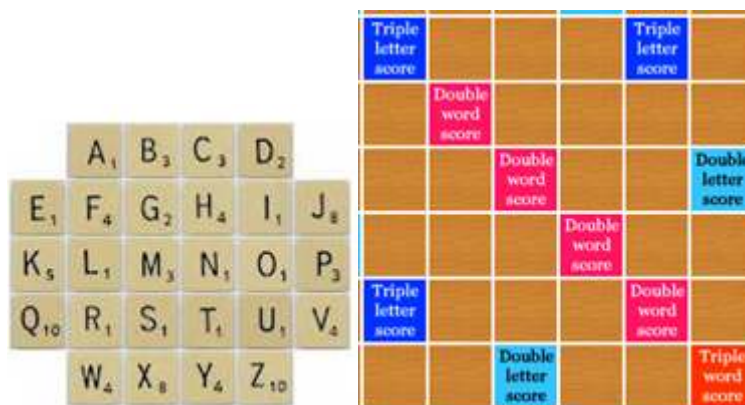
Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 6

During one week last summer, the mean maximum temperature for Tuesday, Wednesday and Thursday was 25^{0}C. On the same week, the mean maximum temperature for Wednesday, Thursday and Friday was 20^{0}C. What was the DIFFERENCE between the mean maximum temperature on Tuesday, and the mean maximum temperature on Friday?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 7

In a game of scrabble, a word is laid out either vertically downwards or horizontally left to right.
What is the maximum score that can be had by using the letters: c,r,a,m,h rearranged to make a commonly used word, and placed strategically on the above board?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 8

A scientist takes a sample of air at a busy intersection of a major city. She finds the sample is composed of about 59% nitrogen, 21% hydrogen, 9% carbon dioxide, 7% methane and 4% oxygen.

If the carbon dioxide component weighs 21 micrograms, what will be the combined weight of the remaining four gases? (Nearest unit)

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 9

If you take Lara's age 5 years ago and treble it, you are 4 years short of having the same value if you had doubled her current age and added 26. How old will Lara be in 3 years' time?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 10

Find a positive solution for x:

$$\frac{\left(\dfrac{2}{x}\right)}{\left(\dfrac{4}{3}\right)} = \frac{\left(\dfrac{x}{2}\right)}{\left(\dfrac{3}{4}\right)}$$

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Qu 11

Justin noticed that his bottle of ginger beer contained 120ml of liquid and was 35% full.
How much liquid needs to be ADDED to get the volume to 85% full? (Nearest ml)

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 12

Look at the following table:

13	10	7	20
8	X		9
18	?	X-7	15
11	16	17	X-13

This is a magic square. Each row, column and the two main diagonals adds to 50.

Find the value of "?"

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 13

If   1+2+3+…+98+99+100 = 5050

Then what will be the sum of all the ODD numbers between 0 and 100?

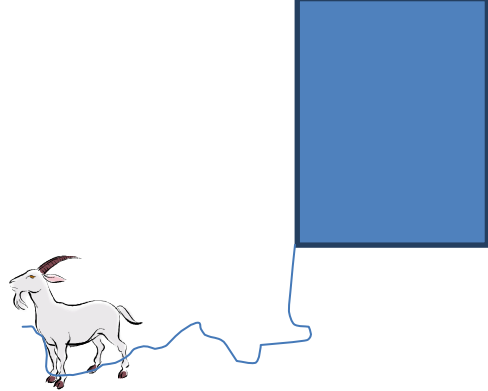| Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 14

14. A goat is chained by a 16m chain to the corner wall of a rectangular building 10m by 8m as shown:
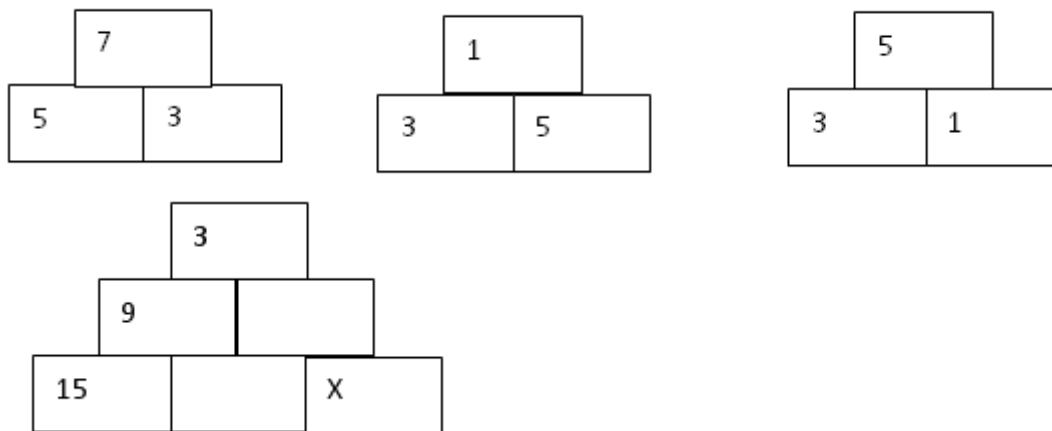
What area of grass is the goat able to eat? (Answer to the nearest unit).

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 15

Study the pattern below: What must be the value of X?

| 7 |
| 5 | 3 |

| 1 |
| 3 | 5 |

| 5 |
| 3 | 1 |

| 3 |
| 9 | |
| 15 | | X |

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 16

A rectangle has the sum of three of its sides totalling 58cm. When three other sides are summed the total comes to 65cm. What is the perimeter of the rectangle?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 17

17. If 6 boys fill 6 notebooks in 6 weeks and 4 girls fill 4 notebooks in 4 weeks, how many notebooks will a class of 12 boys and 12 girls fill in 12 weeks?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 18

A mathematician walks the following route. He walks 4 paces North, then tosses a coin. If it comes up heads he goes 3 paces West. If it comes up tails

he goes 3 paces East.
He then walks North 4 paces and repeats the process until he had completed 18 coin tosses. A straight line is drawn from the point at which he started to the point at which he finished.
What is the DIFFERENCE in distance between the LONGEST possible path he could have taken, and the SHORTEST possible path he could have taken?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 19

Look at the following pattern:

The 1 by 1 square needs 4 matches to form the square.
The 2 by 2 square needs 12 matches to form the square.
The 3 by 3 square needs 24 matches to form the square.
How many matches are needed to form a 10 by 10 square?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5

Question 20
A train travelling at a constant speed takes a quarter of a minute to pass a signpost and takes three quarters of a minute to pass completely through a tunnel which is 600m in length. What is the speed of the train in kilometres per hour?

Attempt 1	Attempt 2	Attempt 3	Attempt 4	Attempt 5