

MATHEMATICS KANGAROO 2012

Austria - 15.3.2012

Group: Benjamin, Grades: 5-6

Name:	
School:	
Class:	

Time allowed: 60 min.

Each correct answer, questions 1.-8.: 3 Points

Each correct answer, questions 9.-16.: 4 Points

Each correct answer, questions 17.-24.: 5 Points

Each question with no answer given: 0 Points

Each incorrect answer: Lose $\frac{1}{4}$ of the points for that question.

You begin with 24 points.



Please write the letter (A, B, C, D, E) of the correct answer under the questions number (1 to 24)
Write neatly and carefully!

1	2	3	4	5	6	7	8

9	10	11	12	13	14	15	16

17	18	19	20	21	22	23	24

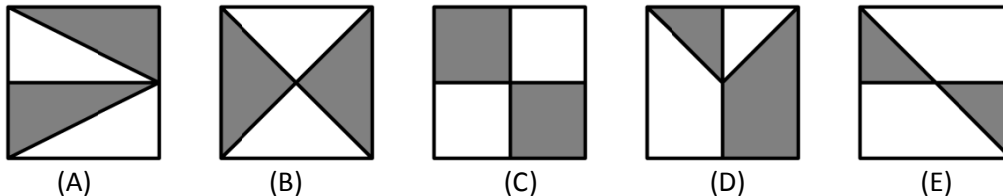
Information on the Kangaroo contest: www.kaenguru.at
If you want to do more in this area, check out the Austrian Mathematical Olympiad. Info at: www.oemo.at

Mathematics Kangaroo 2012
Group Benjamin (Grades 5./6.)
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- 3 Point Questions -

1. In which of the five pictures is the white area bigger than the grey area?



2. Barbara wrote "KAENGURUWETTBEWERB" on the blackboard. For some letters she used the same colour, for different letters different colours. How many different colours did she use.

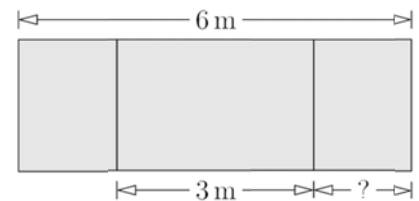
- (A) 7 (B) 8 (C) 9 (D) 10 (E) 11

3. Three bars of chocolate cost 6 €. How much does one bar of chocolate cost?

- (A) 2 € (B) 4 € (C) 1 € (D) 3 € (E) 5 €

4. A blackboard has a total unfolded length of 6m. The middle section is 3m long. How long is the section labelled with a questionmark?

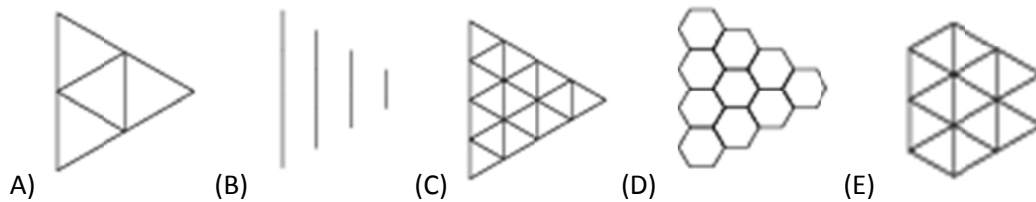
- (A) 1 m (B) 1.25 m (C) 1.5 m (D) 1.75 m (E) 2 m



5. On the 24th February 2012 Grandfathers chicks hatched. There are 29 days in February in 2012. How old are the chicks today on 15th March 2012?

- (A) 29 days (B) 24 days (C) 22 days (D) 20 days (E) 15 days

6. Which pattern will you get if you join the centres of each of the neighbouring hexagons.



7. The number three should be added to the number 6. This amount is then doubled and the result increased by 1. Which of the following sums fits this description?

- (A) $(6 + 3 \times 2) + 1$ (B) $6 + 3 \times 2 + 1$ (C) $(6 + 3) \times (2 + 1)$ (D) $(6 + 3) \times 2 + 1$ (E) $6 + 3 \times (2 + 1)$

8. In the school for animals there are 3 cats, 2 ducks, 2 sheep and some dogs. The teacher counted the legs of all the animals, and got 44. How many dogs go to the school?

- (A) 6 (B) 5 (C) 4 (D) 3 (E) 2

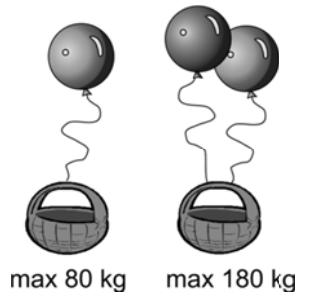
- 4 Point Questions -

9. The last row in an aeroplane is row 25. There is no row 13 and row 15 has only 4 seats. Every other row has 6 seats. How many passenger seats are there on this aeroplane?

- (A) 120 (B) 138 (C) 142 (D) 144 (E) 150

10. In addition to the weight of the basket a single balloon can lift 80 kg. 2 balloons can lift 180 kg in addition to the weight of the basket. How heavy is the basket?

- (A) 60 kg (B) 50 kg (C) 40 kg (D) 30 kg (E) 20 kg

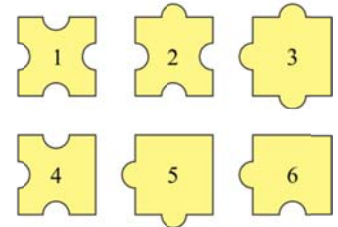
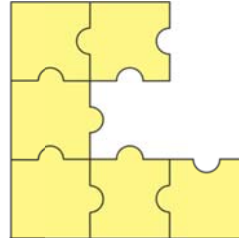


11. Grandmother gave Vivian and Mike some apples and pears. In total they had 25 pieces of fruit. On the way home Vivian ate 1 apple and 3 pears, Mike ate 3 apples and 2 pears. At home they noted that there were exactly the same number of apples and pears in the basket. How many pears had grandmother given them?

- (A) 12 (B) 13 (C) 16 (D) 20 (E) 21

12. Which three puzzle pieces do you need to complete the large puzzle?

- (A) 1, 3, 4 (B) 1, 3, 6 (C) 2, 3, 5 (D) 2, 3, 6 (E) 2, 5, 6



13. Lisa built a large cube out of 8 smaller ones. The small cubes have the same letter on each of their faces (A,B,C or D). Two cubes with a common face always have a different letter on them. Which letter is on the cube that cannot be seen in the picture?

- (A) A (B) B (C) C (D) D (E) The picture is not possible.

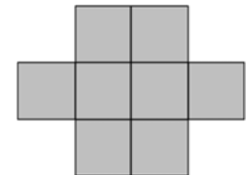


14. The Natural numbers are to be painted. 1 is red, 2 is blue, 3 is green, 4 is red, 5 is blue, 6 is green and so on. Which colour(s), can the sum of a red and a blue number have?

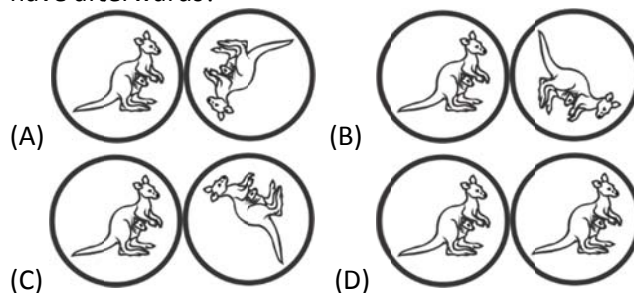
- (A) green only (B) red only (C) blue only (D) red or blue (E) impossible to say.

15. The figure on the right has a perimeter of 42 cm. The figure was made from eight equally sized squares. What is the area of the figure?

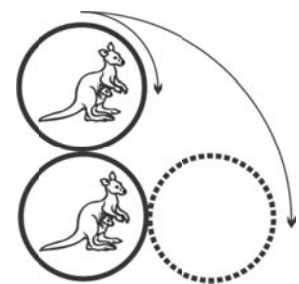
- (A) 8 cm² (B) 9 cm² (C) 24 cm² (D) 72 cm² (E) 128 cm²



16. The upper coin rolls without sliding around the fixed lower coin. Which position will the two coins have afterwards?



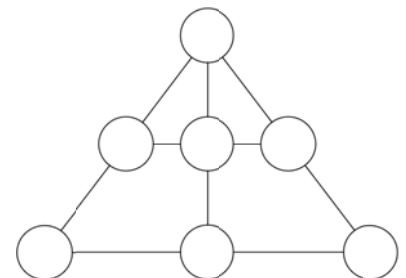
- (E) It depends on the speed.



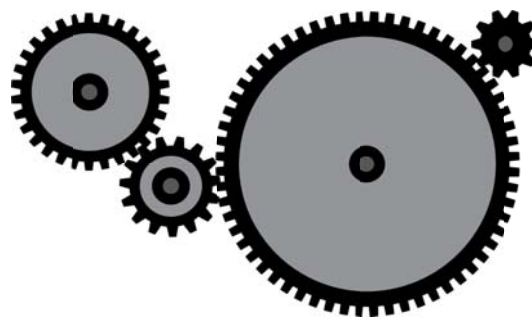
- 5 Point Questions -

17. The numbers 1 to 7 should be written in the small circles so that the sum of the numbers along each line is the same. Which number should be written in the uppermost circle on the triangle?

- (A) 1 (B) 3 (C) 4 (D) 5 (E) 6



18. Four cogs are connected to each other as shown in the picture. The first has 30 teeth, the second 15, the third 60 and the fourth 10. How many turns will the last cog make for each full turn of the first cog?

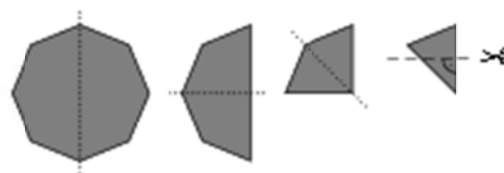


- (A) 3 (B) 4 (C) 6 (D) 8 (E) 9

19. A rectangular piece of paper is 108mm long and 84 mm wide. After making a straight cut you have a square and a leftover piece. You do the same with the leftover piece and so on until the leftover piece itself is square. What is the side length of the last square?

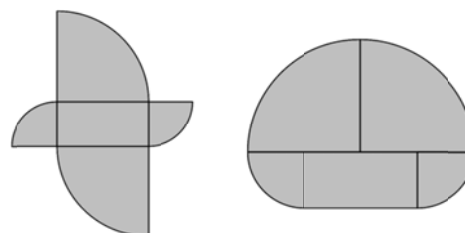
- (A) 1 mm (B) 4 mm (C) 6 mm (D) 10 mm (E) 12 mm

20. A regular octagon is folded three times down the middle as shown, until a triangle is formed. Then the rightmost corner is cut away. Which of the following shapes is formed when the paper is unfolded?



- (A) (B) (C) (D) (E)

21. Both the figures on the right were made out of the same 5 pieces. The rectangle has dimensions 5cm × 10cm. The other pieces are quarter circles with 2 different sized radii. What is the difference between the perimeters of the two figures?



- (A) 2.5 cm (B) 5 cm (C) 10 cm (D) 15 cm (E) 20 cm

22. A few fields of a 4×4 grid were painted red. The numbers in the bottom row and left column give the number of fields coloured red. The red was then rubbed away. Which of the following could be a solution?

- (A)

				4
				2
				1
				1
0	3	3	2	

 (B)

				1
				2
				1
				3
2	2	3	1	

 (C)

				3
				3
				0
				0
1	3	1	1	

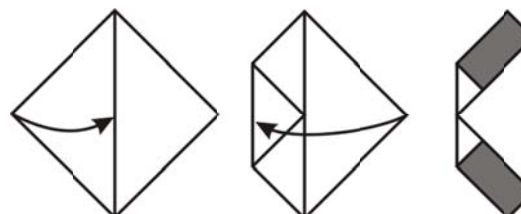
 (D)

				2
				1
				2
				2
2	1	2	2	

 (E)

				0
				3
				3
				1
0	3	1	3	

23. A square piece of paper of area 64 cm² is folded twice as show in the picture. What is the area of the two grey sections?



- (A) 10 cm² (B) 14 cm² (C) 15 cm² (D) 16 cm² (E) 24 cm²

24. 12 children were at a birthday party. The children were 6, 7, 8, 9, and 10 years old. Four of them were 6 years old. There were more 8 year olds than any other age group. What is the average age of the children?

- (A) 8 (B) 7.5 (C) 7 (D) 6.5 (E) 6