



**THE  
AMERICAN  
ACADEMY  
NICOSIA**  
PRIVATE SCHOOL  
EST. 1922

# **The American Academy Nicosia**

## **Sample 2 Entrance Examination Key**

**Serial number 202212**

### **Mathematics**

### **Year 7**

### **Time Allowed: 1 hour**

Read the below instructions carefully before starting the exam:

- Read all instructions carefully.
- If you cannot answer a particular question, move on to the next one without losing time.
- Use of calculator is not allowed.

1. Calculate  $536 + 297$

$$\begin{array}{r} 1 \ 1 \\ 5 \ 3 \ 6 \\ + 2 \ 9 \ 7 \\ \hline 8 \ 3 \ 3 \end{array}$$

= 833

Answer: .....[2]

2. Calculate  $536 - 297$

$$\begin{array}{r} 4 \ 12 \ 16 \\ 5 \ 13 \ 6 \\ - 2 \ 9 \ 7 \\ \hline 2 \ 3 \ 9 \end{array}$$

= 239

Answer: .....[2]

3. Calculate  $536 \times 4$

$$\begin{array}{r} 2 \ 1 \ 2 \\ 5 \ 3 \ 6 \\ \times \phantom{0} \phantom{0} \phantom{0} \ 4 \\ \hline 2 \ 1 \ 4 \ 4 \end{array}$$

= 2144

Answer: .....[2]

4. Calculate  $2184 \div 7$

$$\begin{array}{r} 312 \\ 7 \overline{)2184} \\ \underline{21} \phantom{00} \\ 08 \\ \underline{7} \phantom{00} \\ 14 \\ \underline{14} \\ 0 \end{array}$$

The solution for Long Division of  $\frac{2184}{7}$  is 312

Answer: .....[2]

5. Calculate:

(a)  $\frac{5}{7} - \frac{3}{7} =$

$$\frac{5}{7} - \frac{3}{7} = \frac{2}{7}$$

Answer: .....[1]

(b)  $\frac{4}{9} \times \frac{18}{12} =$

$$\frac{4}{\cancel{9}^1} \times \frac{\cancel{18}^2}{\cancel{12}^3} = \frac{2}{3}$$

1 mark for each simplification

$$\frac{4}{9} \cdot \frac{18}{12} = \frac{2}{3} \quad (\text{Decimal: } 0.66666\dots)$$

Answer: .....[3]

(c)  $\frac{5}{7} \div \frac{3}{14} =$

$$\frac{5}{\cancel{7}^1} \times \frac{\cancel{14}^2}{3} = \frac{10}{3} = 3\frac{1}{3}$$

1 mark for simplification

1 mark for changing to product

Answer: .....[3]

6. Find the next two numbers in these sequences:

(a) 14, 17, 20, 23, .....26....., .....29.....

(b) 23, 19, 15, 11, .....7....., .....3.....

[4]

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7. If by consuming 10 caramels you take 30 calories, how many calories do you take by consuming 35 caramels?

$$10 \rightarrow 30$$

$$35 \rightarrow x$$

$$30 \times 35 = 10 \times x$$

$$1050 = 10x$$

$$x = 105$$

$$30 \times 3.5 = 90 + 15 = 105$$

[3]

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8. Work out  $3 + 4 \times 5 =$

$$3 + 4 \times 5 = 3 + 20$$

$$=23$$

[2]

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9. Find  $\frac{5}{8}$  of 560 kg.

$$560 \div 8 = 70 \text{ kg}$$

$$5 \times 70 = 350 \text{ kg}$$

[2]

10. My garden centre sells summer bedding plants at 85 cents each. I have €30 to spend. How many plants can I buy? Show your working.

$$€30 = 3000 \text{ cents}$$

$$3000 \div 85 =$$

$$\begin{array}{r} 35.2 \\ 85 \overline{) 3000.0 \cdot 0} \\ \underline{255} \\ 450 \\ \underline{425} \\ 250 \\ \underline{170} \\ 800 \end{array} \quad \text{so 35 plants}$$

[3]

11. Choose from this set of numbers.

8	9	10	11
12	13	14	15

- (a) a square number

Answer: .....9.....[1]

- (b) three multiples of 3.

Answer: .....9....., .....12....., .....15..... [3]

- (c) three factors of 60

Answer: .....15....., .....12....., .....10..... [3]

12. Change 0.72 to a fraction leaving your answer in its simplest form.

$$\frac{72}{100} = \frac{36}{50} = \frac{18}{25}$$

Answer: ..... [1]

13. I buy 5 bottles of drink, each costing €1.45 and 4 cakes, each costing 63 cent.

(a) What is the total cost?

$\begin{array}{r} 22 \\ 145 \\ \times \\ \hline 725 \end{array}$ <p>= 725</p> <p>1.45 has 2 decimal places 5 has 0 decimal places Therefore, the answer has 2 decimal places = 7.25</p>	$\begin{array}{r} 21 \\ 63 \\ \times \\ \hline 252 \end{array}$ <p>= 252</p> <p>0.63 has 2 decimal places 4 has 0 decimal places Therefore, the answer has 2 decimal places = 2.52</p>	$\begin{array}{r} 7.25 \\ + 2.52 \\ \hline 9.77 \end{array}$ <p>= 9.77</p>
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Answer: ...**€9.77**.....[3]

(b) How much change do I receive from a €20 note?

$$20.00 - 9.77 \rightarrow \begin{array}{r} 19.90 \\ - 9.77 \\ \hline 10.13 \end{array}$$

= 10.13

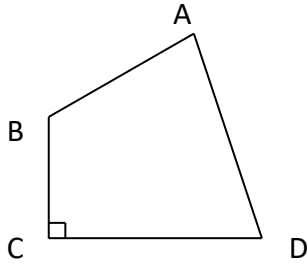
Answer: ...**€10.13**... [2]

14. On Christmas day the temperature in Lisbon was  $-5^{\circ}\text{C}$ . On New Year's day the temperature was 3 degrees lower. What was the temperature on New Year's day?

$$-5 - 3 = -8$$

Answer: .....**-8°C**..... [2]

15. From the following shape find:



(a) One acute angle

Answer: .....D.....[1]

(b) One obtuse angle

Answer: .....B.....[1]

(c) One right angle

Answer: .....C.....[1]

16. Convert the following into decimal form:

(a) 35%

Answer: .....0.35.....[1]

(b)  $\frac{7}{20} = \frac{35}{100} = 0.35$

Answer: .....0.35.....[1]

(c)  $\frac{38}{1000} = 0.038$

Answer: .....0.038.....[1]

17. A train leaves London at 22:45 and reaches Aberdeen at 05:30 the next morning.

(a) Work out how long the journey takes in hours and minutes.

$$22:45 - 24:00 = 1 \text{ hour } 15\text{min}$$

$$24:00 - 05:30 = 5 \text{ hours } 30\text{min}$$

$$1\text{h} + 5\text{h} = 6\text{h}$$

$$15\text{min} + 30\text{min} = 45\text{min}$$

Total: 6 hours 45 minutes

Answer: .....6..... hours .....45..... minutes (2)

An airplane leaves London at 22:45 and takes a total of 11 hours and 35 minutes to fly to Hong Kong. Hong Kong is 7 hours ahead of London (i.e. when the time is 13:00 in London, it is 20:00 in Hong Kong).

- (b) Work out what the local time is in Hong Kong when the flight lands. Give your answer in 24 hour form.

*11 hours after 22:45 = 09:45*

*35 minutes after 09:45 = 10:20 London time*

*7 hours ahead of 10:20 = 17:20 Hong Kong time*

Answer: .....17..... : .....20..... (3)

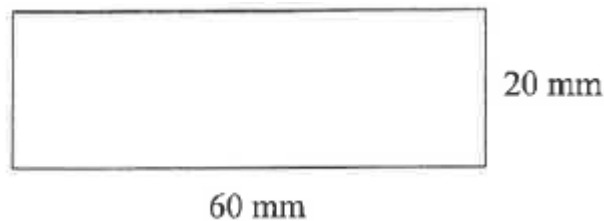
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18. I think of a number, subtract 7 and then divide by 5 and the result is 7. What was the number I thought of?

$$\frac{(\quad)-7}{5} = 7 \quad \text{à} \quad (\quad) - 7 = 35$$

$$(\quad) = 42$$

Answer: .....42.....[2]

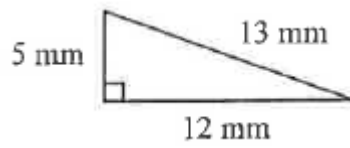
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19. (a) Find the area of the rectangle shown below.



$$20 \times 60 = 1200$$

Answer: .....1200.....  $mm^2$ [2]

George cuts the rectangle up into exact number of right-angled triangles, each with sides as shown in the diagram below.



(b) Calculate the number of triangles that he cuts from the rectangle.

Area of triangle:

$$\frac{5 \times 12}{2} = 30 \text{ mm}^2$$

Area of rectangle:

$$1200 \text{ mm}^2$$

$$1200 \div 30 = 40$$

Answer: .....40..... [3]

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20. Find  $x$  if  $23 - x = 45$ .

$$23 - 45 = x$$

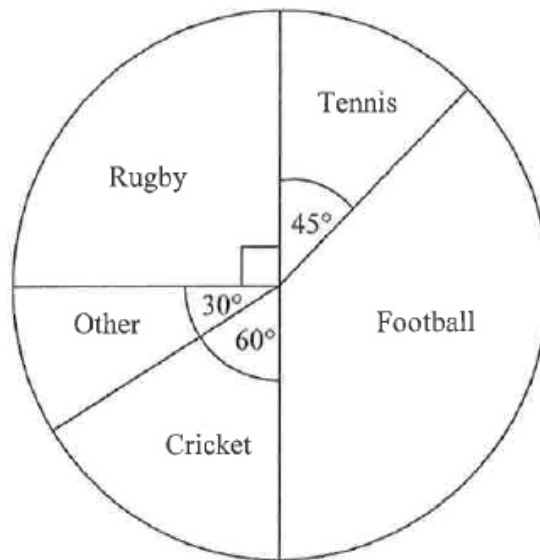
$$x = -22$$

Answer: .....-22..... [2]

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21. The pie chart below represents data collected in a survey by a PE teacher about the favourite sports of a sample of 240 children in a school.



- (a) What do children mostly prefer?

Answer: .....Football.....[1]

- (b) How many children prefer rugby?

$$\frac{90}{360} \times 240 = 60$$

Answer: .....60.....[2]

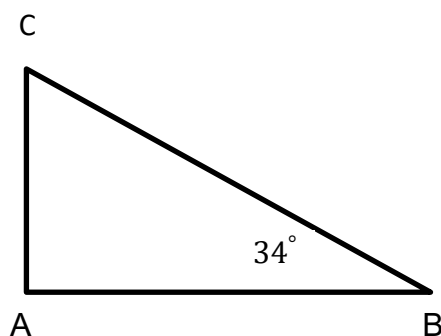
- (c) What's the percentage of the children who prefer **Cricket or Other activity**?

$$30 + 60 = 90$$

$$90 \div 360 = \frac{1}{4} = 25\%$$

Answer: .....25%.....[2]

22. The triangle ABC is a right – angled triangle. Angle B is  $34^\circ$ . Find angle C.



$$90 + 34 = 124^\circ$$

$$c = 180 - 124$$

$$c = 56^\circ$$

Answer: .....[4]

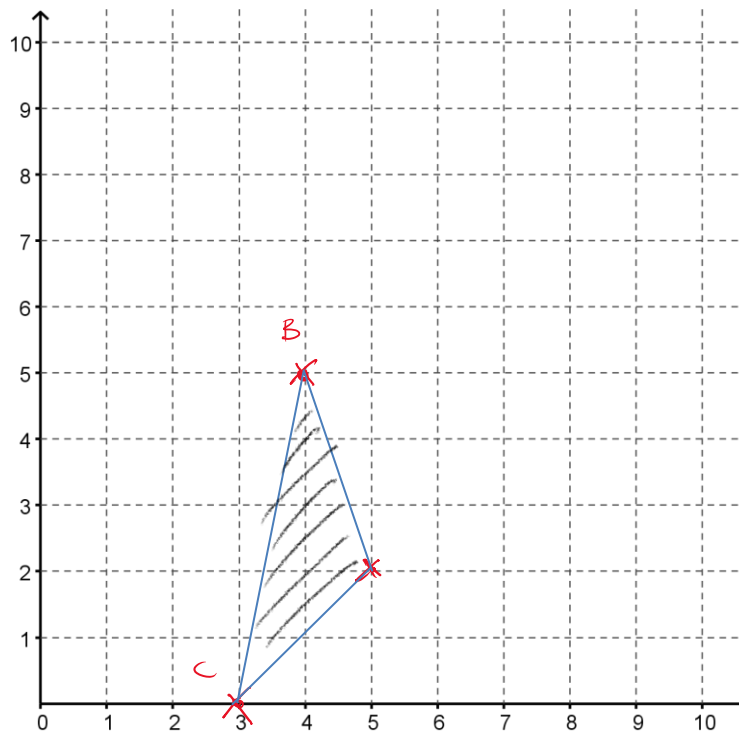
23. Round the following numbers:

- (a) 123 (to the nearest ten) .....120.....
- (b) 4789 (to the nearest hundred) .....4800.....
- (c) 47400 (to the nearest thousand) .....47000.....
- (d) 3.55 (to the nearest whole number) .....4.....

[4]

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24. A, B and C are three points on a grid. A is at (5, 2), B is at (4, 5) and C is at (3,0).



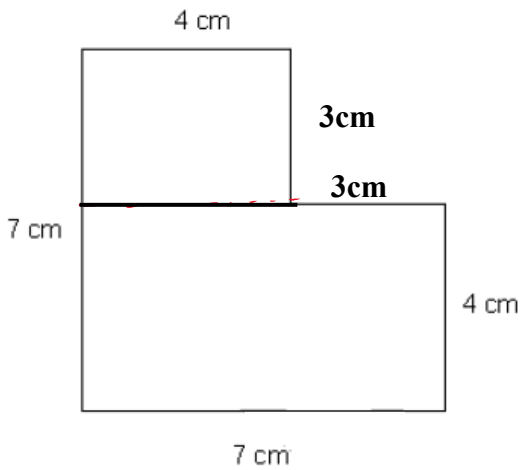
(a) Plot and label the other two points, B and C, and then join the three points and lightly shade the triangle you have formed.

[2]

(b) State the name of the type of triangle that has been formed.

Answer: .....**scalene** or **obtuse** triangle.... [1]

25. Find the perimeter and area of this shape.



$$P = 7 + 7 + 4 + 3 + 3 + 4 = 28cm$$

$$A_1 = 4 \times 3 = 12$$

$$A_2 = 7 \times 4 = 28$$

$$Area = 12 + 28 = 40cm^2$$

Area: ..... $40cm^2$  ..... [3]

Perimeter: ..... $28cm$  ..... [3]

26. Calculate 30% of €240.

$$10\% = 24$$

$$30\% = 24 \times 3 = 72$$

[2]

27. Which has the BIGGEST answer?

$7 \times 4$

$6 \times 5$

$2 \times 5$

$16 + 15$

$\frac{1}{2} \text{ of } 60$

Calculating all values  
Identifying the correct one

Answer: ..... $15+16 = 31$ ..... [2]

28. A dice has numbers from 1 to 6. If it is rolled once, what is the probability of each of these outcomes?

(a) Rolling a 3  $\frac{1}{6}$

(b) Rolling a number less than 5  $\frac{4}{6} = \frac{2}{3}$

(c) Rolling a number greater than 1  $\frac{5}{6}$

(d) Rolling a number that is a multiple of 7 0

[4]










29. If  $a = 8$ ,  $b = 3$  and  $c = 5$  calculate

$$(a - b) \times c$$

$$\begin{aligned} &= (8 - 3) \times 5 \\ &= 5 \times 5 \\ &= 25 \end{aligned}$$

[3]

30. Each shape in this grid is hiding a particular number so that the three shapes in any row or column add up to the value written at the end of that row or column.

			16
			12
			18
15	14	?	+




			12
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$$\boxed{\text{diamond}} = 12/3 = 4$$

			16
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$$\boxed{\text{sun}} = 16/2 = 8$$

Work out the number that should replace the question mark.




15

$$\boxed{\text{clubs}} = 15 - 8 = 7$$

$$4 + 6 + 7 = 17$$

Answer: .....[3]

**END OF PAPER**