



**Pangea Maths Competition
2017-2018 1st Round
TEST BOOK**





Pangea Maths Competition 2017-2018 - 1st Round Year 10 - Test Book

PLEASE READ CAREFULLY!

Please read the below instructions carefully before starting the Pangea exam.

- 1.** This Test Book contains 20 questions and a separate answer sheet shall be provided at the beginning of the test.
 - 2.** Check the Test Book to ensure that it contains all 20 questions and that no question is missing. In case of a faulty Test Book, you should immediately bring it to the notice of the teacher to obtain a fresh Test Book.
 - 3.** Mark your answers in the space provided on the answer sheet by darkening the appropriate circles by **black ball point pen** only.
*Note: Any error in darkening the answer will result in wrong evaluation of the answer sheet. Each question shall be followed by five alternative answers. You are required to identify the one which you feel to be the correct answer and record the answer by darkening the appropriate circle in the answer sheet with **Black Ball Point Pen** only. This will also be mentioned in the instructions given on the front page of the answer sheet. For example, if out of 5 alternatives (A) (B) (C) (D) & (E) given against question No. 15, you identify (B) as the correct answer, you are required to darken the circle (B) only in the answer sheet.*
 - 4.** Use this Test Book first to mark your correct answers on and then mark the answers which you believe correct as your final decision on the OMR (Optical Mark Recognition) answer sheet to avoid scratches and double answers.
 - 5.** The answer will be treated incorrect if more than one circle is darkened or a circle is darkened improperly. Any other method of marking such as tick mark, cross mark, use of dot, line mark and half-filled circle or marks outside the circle shall not be evaluated.
 - 6.** If any question is not attempted, you are required to leave all the circles against that question as blank. Such an answer will be awarded zero mark.
Note: There is no negative marking in this exam so your marks won't get deducted for any wrong answer. In other words, either you leave a question unattempted or mark it wrong it won't matter, in both cases you will be awarded with zero marks.
 - 7.** Inner pages or any blank space/page of Test Book may be used for rough work.
 - 8.** Calculators are not allowed in the examination.
 - 9.** No extra time will be granted after 35 minutes of test time for 20 questions.
 - 10.** After completion of the exam you should hand the OMR answer sheets over to your teacher.
Note: The exam results will be available within one month's time following your school's sending the OMR answer sheets to the Pangea. All exam results, whether online or paper based, will be revealed on the same day. Teachers, parents and students can check the results online on Pangea web page by using the provided credentials to login. Parents and students can also download the dedicated Pangea Mobile App by Edubox and login to check the results.
- Finalists will be announced on the same day when results are published. Teachers and Parents of the finalists will be invited to register to participate in the final exam in London City Centre and as long as each finalist student comes with a supervising adult they can sit in the second exam and then attend the Award Ceremony to enjoy a wonderful event and hear the three award winning students at each year group.

Q1) There are **seven** boys and **two** girls.
They all share **£45** equally.
How much do boys get in total?

- a) £40 b) £30 c) £20 d) £25 e) £35

Q2) What is **140** as the product of its **prime factors**?

- a) $2 \times 2 \times 7 \times 7$ b) $2 \times 2 \times 2 \times 5 \times 7$ c) $2 \times 5 \times 5 \times 7$
d) $2 \times 5 \times 7 \times 7$ e) $2 \times 2 \times 5 \times 7$

Q3) Make x the subject of the formula: **$m = 6n + 4x$**

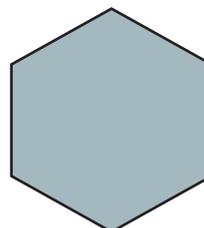
- a) $x = 4(m - 6n)$
b) $x = (m - 6n) / 4$
c) $x = (m + 6n) / 4$
d) $x = m - 6n / 4$
e) $x = (6n - m) / 4$

Q4) A rectangle has a base **$(p + 9)$** and a height of **$(p - 4)$** .
What is the **area** of this rectangle?

- a) $p^2 + 36$ b) $p^2 + 5p + 36$ c) $p^2 + 13p - 36$
d) $p^2 - 5p - 36$ e) $p^2 + 5p - 36$

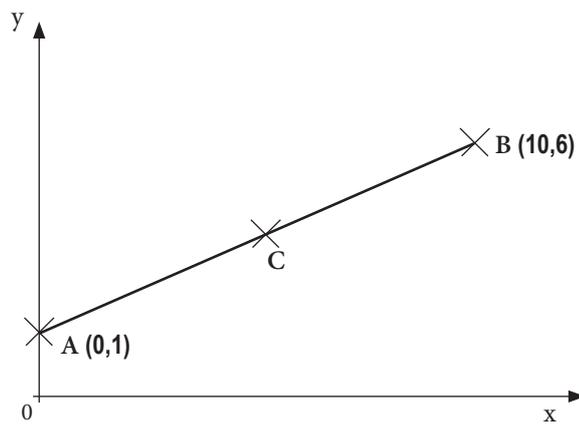
Q5) What is the **internal angle** of this shape?

- a) 100° b) 80° c) 90°
d) 120° e) 60°



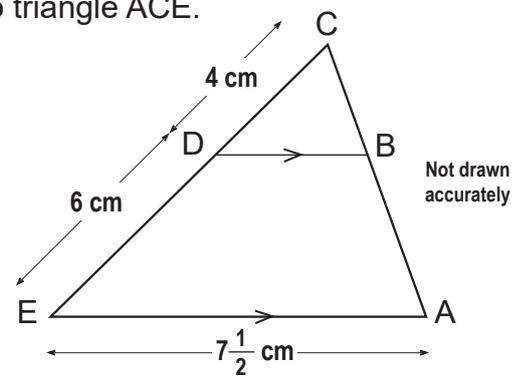
Q6) Point A to point B is a straight line.
Point C is the midpoint.
What's the coordinate of point C?

- a)** (10,7)
- b)** (5,3.5)
- c)** (0,6)
- d)** (10,5)
- e)** (5,4)



Q7) In the diagram triangle BCD is mathematically similar to triangle ACE.
Work out the length of BD.

- a)** -3cm **b)** -2cm **c)** 1cm
- d)** 2cm **e)** 3cm



Q8) The equation of a circle is given by $x^2 + y^2 = 100$
What is the radius of the circle?

- a)** 200 **b)** 100 **c)** 20 **d)** 10 **e)** 5

Q9) The mean of **five** numbers is **10**.
I add one more number and the mean is now 11.
What number did I add?

- a)** 16
- b)** 15
- c)** 17
- d)** 13
- e)** 12

Q10) Find **AB** in terms of **a** and **b**.

- a) $-4a + 3b$
- b) $4a + 6b$
- c) $-4a - 6b$
- d) $6b - 4a$
- e) $4a - 6b$

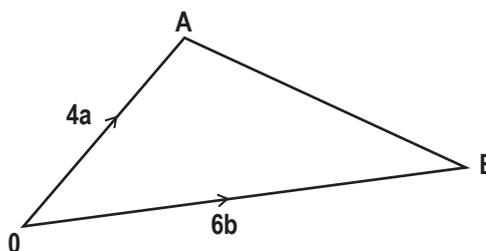


Diagram NOT accurately drawn

Q11) I have two fair dice, which are four-sided.

The dice are numbered 3, 4, 5 and 6.

I roll both dice and multiply the scores.

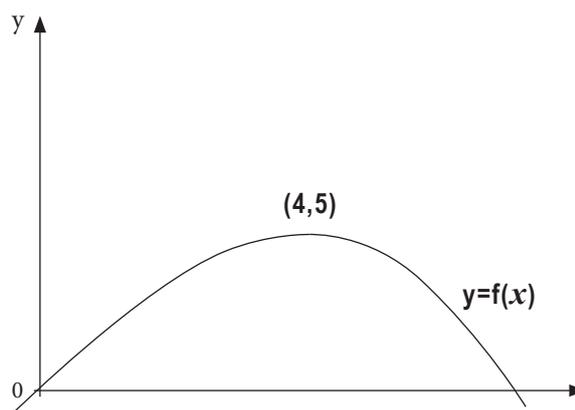
What is the probability that the product is a **multiple of three**?

- a) $10/16$
- b) $2/4$
- c) $1/4$
- d) $4/16$
- e) $12/16$

Q12) The diagram shows **maximum** point **(4,5)** of part of the curve with equation $y = f(x)$.

What is the coordinates of the maximum point of the curve with equation $y = f(x - 3)$?

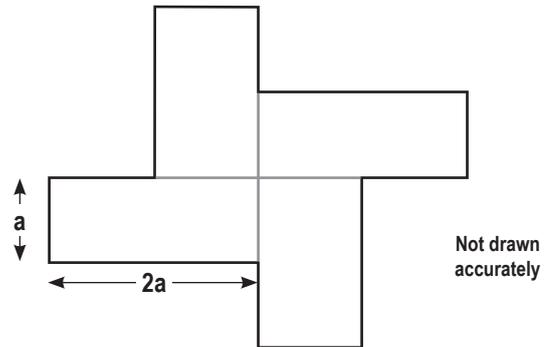
- a) $(4, -3)$
- b) $(1,5)$
- c) $(4,2)$
- d) $(7,5)$
- e) $(4,8)$



Q13) Find x , given that $3x + 6y = 30$ and $x + 6y = 20$

- a) $x = 5/2$ b) $x = 10$ c) $x = 2/5$
 d) $x = 20$ e) $x = 5$

Q14) This shape is made of four congruent rectangles. Each rectangle has dimensions $2a$ by a . The **perimeter** of this shape is **80cm**. What is the **area** of this shape?



- a) 100 cm^2
 b) 250 cm^2
 c) 350 cm^2
 d) 300 cm^2
 e) 200 cm^2

Q15) Find the value of p , given that: $x^2+6x-2=(x+p)^2+q$

- a) 1
 b) 2
 c) 3
 d) 4
 e) 5

Q16) A straight line passes through the point $(8,7)$ and is perpendicular to the line with equation $y = 4x + 6$. What is the equation of the straight line?

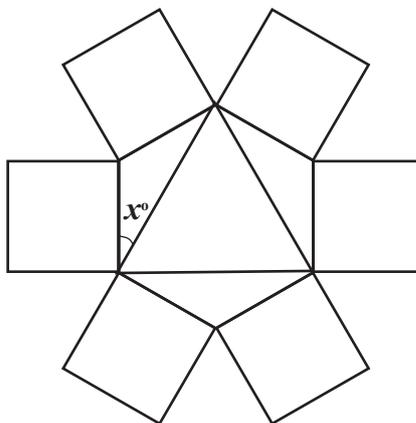
- a) $y = -1/4x+5$
 b) $y = +1/4x+5$
 c) $y = - 1/4x+9$
 d) $y = 1/4x+9$
 e) $y = 4x+9$

Q17) Simplify: $\frac{\sqrt{12N^2}}{\sqrt{3}}$

- a) $\sqrt{4N^2}$ b) $\sqrt{36N^2}$ c) $\sqrt{36N}$ d) $6N$ e) $2N$

Q18) Six squares, creating a hexagon is shown.
What is the value of angle x ?

- a) 30°
b) 10°
c) 120°
d) 60°
e) 180°



Q19) The equation of the straight line through $(\frac{1}{6}, \frac{2}{3})$ is $y=3x+9$.

What is the equation of the line **perpendicular** through this point?

- a) $3y=6x+3/2$
b) $y=-1/3x+2/3$
c) $y=x+11/18$
d) $y=-1/3x+13/18$
e) Other

Q20) Kate has bought a house worth **£300,000**, and its value increases by **4%** every year.
What would be the value of the house 3 years later?

- a) £324.450
b) £304.817
c) £312.000
d) £337,459
e) £312,897

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