By Malmö Borgarskola

Pythagoras Quest Qualification 2023-2024

Number of questions 15
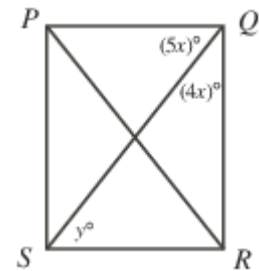*Time allowed: 60 minutes*
Allowed tools: Pencil, paper, rubber
Fill in your answers using the separate answer sheet
Good Luck!

1. What is the smallest integer p so that $\frac{1}{2} < \frac{p}{9}$?

   A. 7
   B. 3
   C. 4
   D. 5
   E. 6

2. PQRS is a rectangle with diagonals PR and QS, as shown. The value of y is

   A. 30°
   B. 40°
   C. 45°
   D. 50°
   E. 60°

3. If the mean (average) of five consecutive integers is 21, the smallest of the five integers is

   A. 17
   B. 21
   C. 20
   D. 18
   E. 19

4. On a science test, Maram got 80% of the 10 multiple choice questions correct and 70% of the 30 short answer questions correct. What percentage of the 40 questions on the test did she answer correctly?

   A. 74%
   B. 72.5%
   C. 76%
   D. 73%
   E. 73.5%

5. Edoardo and Ali are driving directly towards each other. Edoardo is driving at a constant speed of 50 km/h. Ali is driving at a constant speed of 40 km/h. If they are 120 km apart, how long will it take before they meet?
    A. 1 h 12 min
    B. 1 h 25 min
    C. 1 h 15 min
    D. 1 h 33 min
    E. 1 h 20 min

6. In the addition shown, each of P, Q and R are a digit.
   What is P + Q + R?

$$
\begin{array}{r}
P\,Q\,R \\
+\quad\ Q\,R \\
\hline
1\,0\,1\,2
\end{array}
$$

    A. 12
    B. 15
    C. 13
    D. 22
    E. 20

7. Penelope, Quinn, Mia and Benjamin go to the movies. They choose a row with four consecutive empty seats. If Mia and Benjamin must sit beside each other, in how many different ways can the four friends sit?
    A. 6
    B. 5
    C. 12
    D. 30
    E. 3

8. If p is an even integer and q is an odd integer, which of the following could represent an odd integer?

    A. $p \cdot q$
    B. $p + 2q$
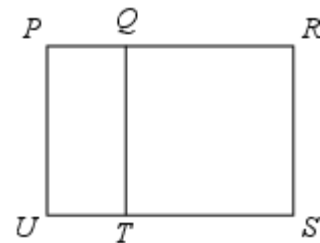   C. $2p + 2q$
    D. $p - q$
    E. $p + q + 1$

9. Heather picked a number, added 7 to the number, multiplied the sum by 2, and then subtracted 4. If the final result was 28, what number did Heather pick?

    A. 9
    B. 5
    C. 19
    D. 23
    E. 11

10. In the diagram, the area of square QRST is 36. Also, the length of PQ is one-half of the length of QR.

What is the perimeter of the rectangle PRSU?

    A. 24
    B. 30
    C. 90
    D. 45
   E. 48

11. There are a number of green and yellow balls in a bag. The fraction of green balls is 3/10. When 9 balls of each colour are removed, the fraction of green balls becomes 1/4.
    How many balls were originally in the bag?
    - A. 60
    - B. 90
    - C. 100
    - D. 70
    - E. 80

12. In the diagram, PQ is a diameter of a larger circle, point R is on PQ, and smaller semi-circles with diameters PR and QR are drawn. If PR = 6 and QR = 4 , what is the fraction of the area of the shaded region to the area of the unshaded region?
    - A. 4/9
    - B. ⅔
    - C. ⅗
    - D. ⅖
    - E. ½
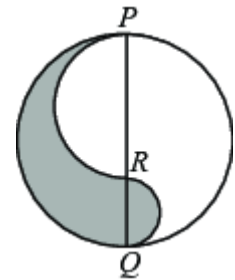
13. Eyvör and Andrei play a game in which each player is equally likely to win. The first player to win three games becomes the champion, and no further games are played. If Eyvör has won the first game, what is the probability that Eyvör becomes the champion?
    - A. ¼
    - B. ⅝
    - C. 11/16
    - D. ⅗
    - E. ¾

14. Three years ago, Sarah was three times as old as her brother Max was then. In five years, Sarah will be twice as old as Max will be then. What is the sum of their ages now?

A. 38

B. 39

C. 40

D. 41

E. 42

15. How many positive divisors, other than 1 and the number itself, does 23400 have?

Answer only: