Mathematics Practice Test

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Practice Questions
Here are some practice examples to show you what the questions on the real test are like

Question P1
$$10 + 3 =$$

A: 10   **B:** 11   **C:** 12   **D:** 13   **E:** None of these

Question P2
Which is the largest number?
A: 100   **B:** 1060   **C:** 1600   **D:** 600   **E:** 580

Question P3
$$3^2 =$$

A: 9   **B:** 6   **C:** 3   **D:** 15   **E:** None of these

You will have **30 minutes** to do as many questions as you can.
Calculators are not permitted
Please do not turn this page until you are asked to do so.

Question 1

$$12(x + 4) + 8 = 9$$
$$y = 4(x + 4)$$
$$y =$$

A: 51 **B:** $\frac{1}{3}$ **C:** $\frac{-1}{3}$ **D:** $\frac{17}{3}$ **E:** -3

Question 2

Consider a right angled triangle where one of the non-hypotenuse sides has length 3 and the angle it makes with the hypotenuse is 65. What is the area of this triangle?

A: $\frac{3\cos 65}{2}$ **B:** $\frac{9\tan 65}{2}$ **C:** $\frac{9\sin 65}{2}$ **D:** $\frac{9\cos 65}{2}$ **E:** $\frac{3\sin 65}{2}$

Question 3

$$\frac{x}{y} + 16x + 90y$$

A: $\frac{x+16xy+90y^2}{y}$ **B:** $\frac{x+106}{y}$ **C:** $\frac{x+16x+90y}{y}$ **D:** $\frac{x+16y^2+90xy}{y}$ **E:** $\frac{x+16x^2+90xy}{y}$

Question 4

A special coin has a probability of $\frac{1}{4}$ of showing heads when flipped and $\frac{3}{4}$ of showing tails. If the coin is flipped 12 times what is the probability of at least 1 head

A: $1 - \left(\frac{1}{4}\right)^{12}$ **B:** $\frac{12}{4}$ **C:** $\left(\frac{1}{4}\right)^{12}$ **D:** $\frac{1}{4}$ **E:** $1 - \left(\frac{3}{4}\right)^{12}$

Question 5

An item is for sale at \$207 after a 3% discount. What is the original price?

A: 62100 **B:** 2007900 **C:** $\frac{21321}{100}$ **D:** 621 **E:** $\frac{20700}{97}$

Question 6

Which point lies above the line with the equation $y = 3x + 4$

A: $(1, 8)$ **B:** $(2, 10)$ **C:** $(3, 9)$ **D:** $(0, 3)$ **E:** $(0, -3)$

Question 7

Factorise $x^2 + 14x + 33$

A: $(x + 11)(x + 3)$ **B:** $(x - 11)(x - 3)$ **C:** $(x - 11)(x + 3)$ **D:** $(x + 11)(x - 3)$ **E:** $(x + 14)^2$

Question 8

A number x is subtracted from 3 times its square and the result is 3. An equation to find the value of x is

A: $x - 3x^2 = 3$ **B:** $x^2 - 3x = 3$ **C:** $3x^2 - x = 3$ **D:** $3(x^2 - x) = 3$
E: $3x - x^2 = 3$

Question 9

$$-7 + -3 - -12 + 8 =$$

A: -6 **B:** -14 **C:** -30 **D:** 10 **E:** -8

Question 10

The mean of a group of 10 numbers is 5. If 9 is added into the group what is the new mean?

A: $\frac{59}{11}$ **B:** $\frac{59}{2}$ **C:** $\frac{14}{2}$ **D:** $\frac{59}{10}$ **E:** Not enough information

Question 11

Solve for x

$$2x = \frac{-128}{x + 16}$$

A: 8 **B:** -8 **C:** -16 **D:** 0 **E:** 16

Question 12

What is the turning point of the parabola with the equation? $y = 27(x-64)^2 + 43$

A: $(-64, -43)$ **B:** $(64, 43)$ **C:** $(64, -43)$ **D:** $(1728, 43)$ **E:** $(-64, 43)$

Question 13

Expand and simplify

$$12(2x + 11) + 4(6x + 12)$$

A: $8x+180$ **B:** $48x+48$ **C:** $48x+180$ **D:** $48x+23$ **E:** $24x+180$

Question 14
Consider a right angled triangle where one of the non right angles is α and $\tan \alpha = 4$ If the length of the adjacent sides is 7 what is the length of the hypotenuse?

A: $\sqrt{65}$ **B:** $\frac{4}{7}$ **C:** $\sqrt{800}$ **D:** $\sqrt{833}$ **E:** 28

Question 15
$$x = \frac{9}{y+6}$$
$$y =$$

A: $\frac{9}{x} - 6$ **B:** $\frac{9}{x-6}$ **C:** $\frac{9}{x} + 6$ **D:** $9x - 6$ **E:** $\frac{9}{x+6}$

Question 16
The parallel sides of a trapezium have lengths 4 and 3. The area is 8. What is its height?

A: $\frac{16}{7}$ **B:** $\frac{14}{8}$ **C:** 112 **D:** $\frac{8}{14}$ **E:** $\frac{8}{7}$

Question 17
Which of the following equations give the same line as $y = 5x + 3$?

A: $y - 7 = 5x - 4$ **B:** $\frac{y}{5} - 3 = x$ **C:** $y + 3 = 5x$ **D:** $y - \frac{3}{5} = x$
E: None of these

Question 18
The simple interest on \$126 at 10% after 12 years is.

A: 15120 **B:** $\frac{15120}{100} + 126$ **C:** $\frac{15120}{100}$ **D:** $\frac{166320}{100}$ **E:** $\frac{1260}{100}$

Question 19
$$4^x = (4^{10})^y$$

What is the relationship between x and y

A: $y = 4x$ **B:** $10x = y$ **C:** $10 + x = y$ **D:** $x = 10 + y$ **E:** $x = 10y$

Question 20

Consider a circle of radius 2. A circle is cut out of it so that the area of this smaller circle is 12 times the area of the remaining part. What is the radius of this circle?

A: $2\sqrt{\frac{12}{13}}$ **B:** $2\frac{12}{13}$ **C:** $2\sqrt{\frac{12}{11}}$ **D:** $2\sqrt{12}$ **E:** $2\frac{12}{13}$

Question 21

To make $104 per week at 3% commission the value of goods solds should be.

A: 31200   **B:** $\frac{10400}{3}$ **C:** 312   **D:** $\frac{312}{100}$ **E:** $\frac{104}{3}$

Question 22

Factorise

$$3xz + 9xy$$

A: $3xy(z+3)$ **B:** $3x(z+3xy)$ **C:** $3xz(1+3y)$ **D:** $3x(z+3y)$ **E:** $3x(z+9y)$

Question 23

$$(11a + 11b)(11a - 11b) =$$

A: $121a + 121b$ **B:** $121a^2 + 121b^2$ **C:** $121a^2 - 242ab + 121b^2$ **D:** $121a - 121b$ **E:** $121a^2 - 121b^2$

Question 24

$\frac{9}{6}$ of a number is equal to 5. What is the number?

A: $\frac{6}{9}$ **B:** $\frac{5}{9}$ **C:** $\frac{45}{9}$ **D:** $\frac{9}{6}$ **E:** $\frac{30}{9}$

Question 25

Expand and simplify

$$8(12x + 8) + 12(6x + 8)$$

A: $96x + 160$ **B:** $168x + 160$ **C:** $18x + 160$ **D:** $168x + 16$ **E:** $168x + 96$

Question 26

Which point satisfies the equation $y < 4x^2 + 11$

A: $(1, 14)$ **B:** $(-2, 28)$ **C:** $(2, 28)$ **D:** $(-1, 15)$ **E:** $(0, 11)$

Question 27

Consider two similar triangles. The first has side lengths 5, 12 and 16. The second has a side length of 16 that corresponds to the side with length 5 on the first. What is the length of the side on the second that corresponds to the side with length 16 on the first?

A: 256   **B:** 192   **C:** 5   **D:** $\frac{192}{5}$ **E:** $\frac{256}{5}$

Question 28

$$(x^2 + 12)(x^3 + 6) =$$

A: $x^5 + 12x^2 + 72$ **B:** $x^6 + 12x^3 + 6x^2 + 72$ **C:** $x^5 + 12x^3 + 6x^2 + 72$

D: $x^5 + 72$ **E:** $x^5 + 12x^3 + 72$

Question 29

A right angled triangle has two non-hypotenuse sides of length 12 and 5 Let α denote the angle made between the side with length 12 and the hypotenuse.

$\sin \alpha =$

A: $\frac{5}{12}$ **B:** $\frac{12}{5}$ **C:** $\sqrt{169}$ **D:** $\frac{12}{\sqrt{169}}$ **E:** $\frac{5}{\sqrt{169}}$

Question 30

To make \$290 per week at 4% commission the value of goods solds should be.

A: 1160   **B:** $\frac{29000}{4}$ **C:** $\frac{290}{4}$ **D:** 116000   **E:** $\frac{1160}{100}$

Question 31

$$y = 6x + 12$$

$$\frac{x - 12}{x - 3} =$$

A: $\frac{y}{y+9}$ **B:** $\frac{y-24}{y-15}$ **C:** $\frac{y-60}{y-6}$ **D:** $\frac{y-84}{y-30}$ **E:** $\frac{y-12}{y-3}$

Question 32

$$\frac{\frac{1}{12} + \frac{1}{11}}{\frac{1}{7}} =$$

A: $\frac{95}{132}$ **B:** $\frac{161}{132}$ **C:** $\frac{89}{132}$ **D:** $\frac{23}{924}$ **E:** None of these

Question 33

The simple interest on \$149 at 12% after 4 years is.

A: $\frac{66752}{100}$ **B:** 7152 **C:** $\frac{1788}{100}$ **D:** $\frac{7152}{100}$ **E:** $\frac{7152}{100} + 149$

Question 34

$$\frac{x^2 - 4}{5x - 10} \div \frac{x + 2}{9} =$$

A: $\frac{1}{5}$ **B:** $\frac{1}{45}$ **C:** $\frac{9}{5}$ **D:** $\frac{5}{9}$ **E:** 45

Question 35

Which point lies above the line with the equation $y = 2x + 4$

A: $(0, -2)$ **B:** $(2, 8)$ **C:** $(3, 6)$ **D:** $(0, 3)$ **E:** $(1, 7)$

Question 36

An item is for sale at \$229 after a 11% discount. What is the original price?

A: $\frac{25419}{100}$ **B:** 2038100 **C:** 2519 **D:** 251900 **E:** $\frac{22900}{89}$

Question 37

$$\frac{x}{y} + 31x + 91y$$

A: $\frac{x+122}{y}$ **B:** $\frac{x+31x+91y}{y}$ **C:** $\frac{x+31x^2+91xy}{y}$ **D:** $\frac{x+31xy+91y^2}{y}$ **E:** $\frac{x+31y^2+91xy}{y}$

Question 38

A rectangular prism has length 5, width 8 and height 10. What is its surface

area?
A: 400 **B:** 23 **C:** 46 **D:** 340 **E:** 170

Question 39

What is the perimeter of a square with an area of 4cm²?
A: 10cm **B:** 8cm **C:** 4cm **D:** 2cm **E:** 6cm

Question 40

Consider a circle of radius 11. A circle is cut out of it so that the area of this smaller circle is 2 times the area of the remaining part. What is the radius of this circle?

A: $11\frac{2}{3}$ **B:** $11\sqrt{\frac{2}{1}}$ **C:** $11\frac{2}{3}$ **D:** $11\sqrt{\frac{2}{3}}$ **E:** $11\sqrt{2}$

Question 41

The sum of 2 numbers is 28 and the difference is 12. What is the larger number?
A: $\frac{40}{3}$ **B:** 40 **C:** 16 **D:** $\frac{40}{2}$ **E:** $\frac{16}{2}$

Question 42

$$-11 + -11 - -10 + 4 =$$

A: -36 **B:** -28 **C:** -8 **D:** -16 **E:** -6

Question 43

A random number generator can generate the numbers 1, 2 and 3. 2 is6 times as likely to appear as 1 and 3 is 7 times as likely to appear as 2. What is the probability of 1 appearing?
A: $\frac{1}{48}$ **B:** $\frac{1}{13}$ **C:** $\frac{1}{7}$ **D:** $\frac{1}{49}$ **E:** $\frac{1}{14}$

Question 44

Find x

$$x^2 + 16 = 8x$$

A: -4 **B:** 4 **C:** -8 **D:** 8 **E:** None of these

Question 45

$$11\sqrt{x} = 9\sqrt{y}$$

$$\frac{x}{y} =$$

A: $\frac{\sqrt{9}}{\sqrt{11}}$ **B:** $\frac{121}{81}$ **C:** $\frac{81}{121}$ **D:** $\frac{9}{11}$ **E:** $\frac{11}{9}$

Question 46

If $10\frac{1}{2} : 2\frac{1}{2}$ then $21 : x$ what is x?
A: 5   **B:** 4   **C:** 6   **D:** 3   **E:** 2

Question 47

$$x = \frac{12}{y+2}$$

$$y =$$

A: $\frac{12}{x} - 2$ **B:** $12x - 2$ **C:** $\frac{12}{x} + 2$ **D:** $\frac{12}{x+2}$ **E:** $\frac{12}{x-2}$

Question 48

A rectangular prism has length 2, width 8 and height 6. What is the length of the longest line between two corners?
A: $\sqrt{40}$ **B:** 16   **C:** $\sqrt{100}$ **D:** $\sqrt{68}$ **E:** $\sqrt{104}$

Question 49

Factorise $110x^2 + 192x + 72$
A: $(x+6)(x+12)$ **B:** $(11x+12)(10x+6)$ **C:** $(x+6)(110x+12)$ **D:** $(110x+6)(x+12)$ **E:** $(11x+6)(10x+12)$

Question 50

A special coin has a probability of $\frac{1}{10}$ of showing heads when flipped and $\frac{9}{10}$ of showing tails. If the coin is flipped 9 times what is the probability of at least 1 head
A: $\frac{9}{10}$ **B:** $\frac{1}{10}^9$ **C:** $\frac{1}{10}$ **D:** $1 - \frac{1}{10}^9$ **E:** $1 - \frac{9}{10}^9$

Question 51

Consider a right angled triangle where the lengths of the two non-hypotenuse sides are x and $10x + 3$ What is the length of the hypotenuse?

A: $\sqrt{101x^2 + 9}$ **B:** $101x^2 + 9$ **C:** $\sqrt{101x^2 + 60x + 9}$ **D:** $101x^2 + 60x + 9$ **E:** $11x + 3$

Question 52

The mean of a group of 10 numbers is 10. A number x is added to this group and the new mean of these11 numbers is 19. What is x?

A: 109   **B:** 19   **C:** 100   **D:** 309   **E:** Not enough information

Question 53

An item is sold for \$251 at 7% profit. The cost of the item is.

A: $\frac{1757}{100}$ **B:** $\frac{23343}{100}$ **C:** $251 - \frac{1757}{100}$ **D:** $251 - \frac{23343}{100}$ **E:** $\frac{251}{1 + \frac{7}{100}}$

Question 54

Factorise $x^2 - 81$

A: $(x - 9)^2$ **B:** $(x - 9)(x + 9)$ **C:** $(x + 9)^2$ **D:** $x(x - 81)$ **E:** $x(x - 9)$

Question 55

An item is sold for \$262 at 9% profit. The cost of the item is.

A: $262 - \frac{23842}{100}$ **B:** $\frac{23842}{100}$ **C:** $262 - \frac{2358}{100}$ **D:** $\frac{2358}{100}$ **E:** $\frac{262}{1 + \frac{9}{100}}$

Question 56

Find x

$$12x + 12 = 6$$

A: $\frac{-138}{12}$ **B:** $\frac{150}{12}$ **C:** $\frac{-6}{12}$ **D:** $\frac{18}{12}$ **E:** None of these

Question 57

$$6^x = (6^4)^y$$

What is the relationship between x and y

A: $4x = y$ **B:** $y = 6x$ **C:** $x = 4 + y$ **D:** $x = 4y$ **E:** $4 + x = y$

Question 58

$$\frac{8}{x} + \frac{3}{y} + \frac{3}{z} =$$

A: $\frac{8yz+3xz+3xy}{xyz}$ **B:** $\frac{14}{xyz}$ **C:** $\frac{72}{x+y+z}$ **D:** $\frac{8x+3y+3z}{xyz}$ **E:** $\frac{72xyz}{x+y+z}$

Question 59

Factorise

$$10xz + 100xy$$

A: $10xz(1 + 10y)$ **B:** $10x(z + 10xy)$ **C:** $10x(z + 10y)$ **D:** $10x(z + 100y)$ **E:** $10xy(z + 10)$

Question 60

what number is halfway between $\frac{1}{2}$ and $\frac{1}{4}$

A: $\frac{3}{8}$ **B:** $\frac{7}{16}$ **C:** $\frac{1}{3}$ **D:** $\frac{5}{16}$ **E:** None of these