YOUR NAME : _____

Summer Examinations Revision 2024

Exams start Monday 10th June 2024

Lesson 8

8.1 Exercise

Marks Available : 143

Question 1

(i) Solve these simultaneous equations.
You'll need to decide if they should be combined by addition or subtraction.

$$13x + 4y = 22$$
$$7x + 4y = 10$$

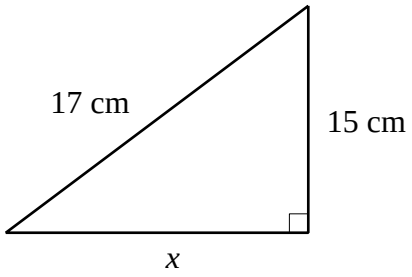
[7 marks]

(ii) Solve these simultaneous equations.
You'll need to decide if they should be combined by addition or subtraction.

$$12x + 5y = 75$$
$$9x - 5y = 30$$

[7 marks]

Question 2



(i) Work out 15^2 without a calculator or, if you just know it, write it down !

[2 marks]

(ii) Work out 17^2 without a calculator or, if you just know it, write it down !

[2 marks]

(iii) Use the theorem of Pythagoras to find the length of the side marked *x*.

[4 marks]

(iv) Hence determine the perimeter of the triangle.

[3 marks]

Question 3

The number 100 can be written as a ***product of primes*** like this;

$$100 = 2 \times 2 \times 5 \times 5$$

Write the following numbers as ***products of primes***;

(i) 21 **(ii)** 20 **(iii)** 56

[1, 1, 1 marks]

Question 4

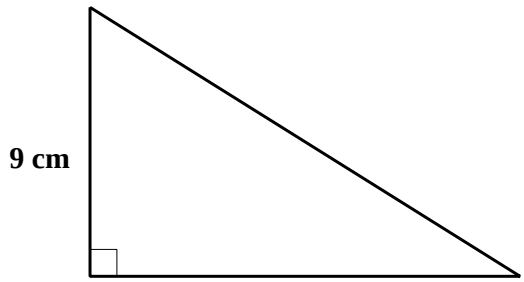
Find the value of

(i) $9^{\frac{1}{2}}$ **(ii)** 9^{0} **(iii)** 9^{1} **(iv)** 9^{2} **(v)** $9^{-\frac{1}{2}}$

[5 marks]

Question 5

Find the length of the hypotenuse of this triangle;



[4 marks]

Question 6

(i) Solve these simultaneous equations.
You'll need to decide if they should be combined by addition or subtraction.

$$3x + 9y = 30$$
$$3x + 4y = 20$$

[7 marks]

(ii) Solve these simultaneous equations.
You'll need to decide if they should be combined by addition or subtraction.

$$7x + 5y = 64$$
$$-7x + 9y = 76$$

[7 marks]

Question 7

(a) Expand the brackets,

(i) $(x - 3)(x - 6)$

[3 marks]

(ii) $(x - 18)(x - 1)$

[3 marks]

(iii) $(x - 9)(x - 2)$

[3 marks]

(b) Hence, or otherwise, factorise

(i) $x^2 - 11x + 18$

[1 mark]

(ii) $x^2 - 9x + 18$

[1 mark]

(iii) $x^2 - 19x + 18$

[1 mark]

Question 8

Solve the following equations.

You have to collect some terms together first;

(i) $2x + 1 - x = 3$

(ii) $3y + 2y + 4 = 15$

(iii) $2p - p = 3 - 2$

(iv) $2y + 3y - 4 = 4y$

(v) $14p - 10p + 3 = 2 - p$

(vi) $9x - 2x = 15 + 2x$

(vii) $4x^3 + 5 - x^3 = 29$

(viii) $3x^7 - x^7 + 3x = 2x^7 + 18$

(ix) $7x^2 = 144 + 3x^2$

[3 marks each = 27 marks]

Question 9

Solve the following equations,

(i) $2(x + 1) = -6$

(ii) $3(2 + y) = 24$

(iii) $2 + 2(p + 1) = 8$

(iv) $3(2 - r) + 2 = 4r - 6$

(v) $2(r - 1) = 3(r + 2)$

(vi) $3(2x + 1) = 4 + 4x$

(vii) $3(2x + 1) + 2(1 - 2x) = x - 7$

(viii) $x(x + 1) = x + 1$

[4 marks each = 32 marks]

Question 10

Simplify the following by collecting together as many terms as possible;

(i) $x^2 + 7 + 3x^2 - 2$ **(ii)** $5x^2 + 4x - 3x^2$

(iii) $7x^3 + 8x^2 - 4x^2 + 9$ **(iv)** $3x^5 + 7x^4 - 2x^4$

(v) $17 + x^5 + 11 + x^2 + x^5$ (vi) $1 + (3x)^2 + 3x^2$

[18 marks]

Question 11

All of the above are expressions.
They are not equations.
What is the difference between an expression and an equation ?

[3 marks]