

FINAL EXAM REVIEW #3



NUMBER THEORY

ALGEBRA ✓

GEOMETRY LINES AND
ANGLES

MEASUREMENT

INTEGERS, POWERS,
AND ROOTS

RATIO, PROPORTION
PERCENT

COORDINATE
GEOMETRY

STATISTICS

PROBABILITY

Work through all the questions below and check answers at the end of the worksheet. If you have any question with this section, please ask during the next class time or come to consultation.

ALGEBRA

1.

a $3(z + 2)$

d $7(x + 3z + 1)$

g $2a(3x - 4y + 7)$

j $4(2x - 5y - 2)$

m $5x(x + 3y + 7z)$

p $9y(x - z + p)$

b $3(3z - 2)$

e $6(2 - 3a - 5b)$

h $x(5 - 2x + 3y)$

k $6(m + 2n + 8)$

n $8x(a - 3b + c)$

q $6a(a + 5b + 2c)$

c $10(2z - 3y)$

f $4(5z - 2x + 3y)$

i $2p(3 + x - 2q)$

l $7x(x + 3y + 4)$

o $10x(x + 5) + 1$

r $3x(x^2 + 3x + 9)$

2.

Expand and then simplify by collecting like terms:

a $m(m + 2) + m(2m + 1)$

b $x(x + 2) - x^2$

c $3a(a + 2) - 2a^2$

d $5x(x + 2) - 2$

e $3a(a + 2) + 5a(a + 1)$

f $4(p + 3q) + 2(p + 2q)$

g $x(x + 3y) + 2x(x + y)$

h $4(3 + 2x) + 4x(x + 1)$

3 Expand and simplify:

a $3(x + 2) - 2(x + 1)$

b $4(x - 7) - 2(3 - x)$

c $3(x - 2) - 2(x + 2)$

d $3(y - 4) - 2(y + 3)$

e $5(y + 2) - 2(y - 3)$

f $6(b - 3) - 3(b - 1)$

4 Expand and simplify:

a $x(x + 4) - x(x + 2)$

b $x(2x - 1) - x(7 - x)$

c $-(x + 6) - 2(x + 1)$

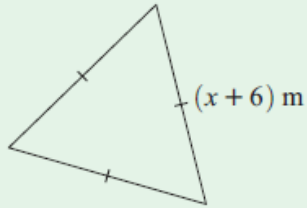
d $-2(x - 1) - 3(5 - x)$

e $-a(a + 2) - 2a(1 - a)$

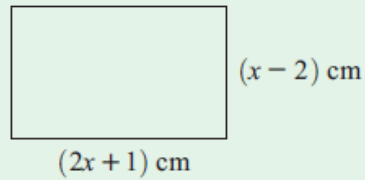
f $-(11 - a) - 2(a + 6)$

5 Find, in simplest form, an expression for the perimeter P of:

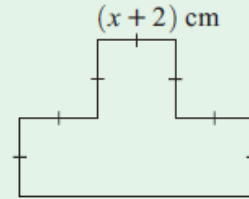
a



b

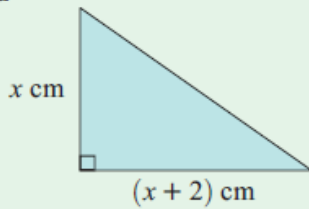


c

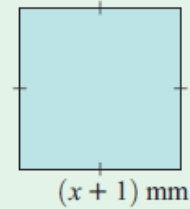


6 Find, in simplest form, an expression for the area A of:

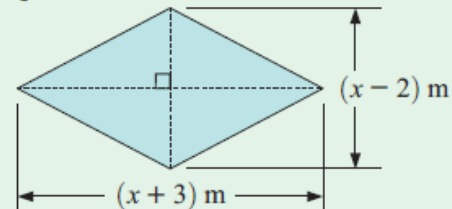
a



b



c



EQUATIONS

5 Solve for x :

a $2(2x + 1) = 30$

b $3(4x - 3) = -12$

c $4(2x - 7) = 20$

d $7(3x - 4) = 63$

e $6(3x + 3) = -72$

f $-2(6x - 3) = 6$

6 Solve the following equations:

a $4a + 3 = 19$

b $\frac{x}{4} + 5 = 2$

c $\frac{y}{3} - 1 = 6$

d $4(x + 2) = 20$

e $6(m - 9) = 18$

f $3x - 5 = 28$

g $\frac{a}{4} + 2 = 7$

h $\frac{x + 14}{2} = 8$

i $\frac{5m - 4}{9} = 4$

Solve the following equations:

e $3x + 2(x + 1) = 8$

f $4x - 1 + 3(2x - 2) = 4$

g $x + 2 - 4(x - 1) = 11$

h $2(x - 1) - 5(x + 2) = -8$

i $3(1 - x) - 2(2 - x) = 4$

j $5(x - 2) + 3(1 - 2x) = 6$

k $4(2x - 3) - 5(3x + 1) = -2$

l $3 - 2x - (x + 4) = -11$

m $2(1 - 3x) - (5 - x) = 7$

n $4x + 2(x - 1) + x = 9$

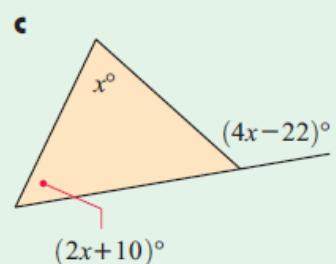
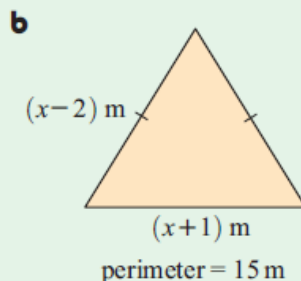
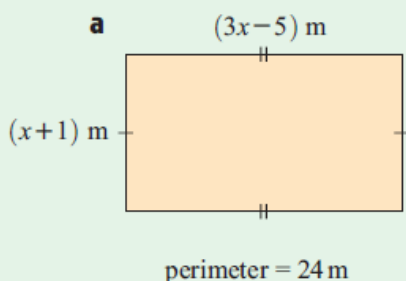


WORDED QUESTIONS

1 Use equations to solve the following problems:

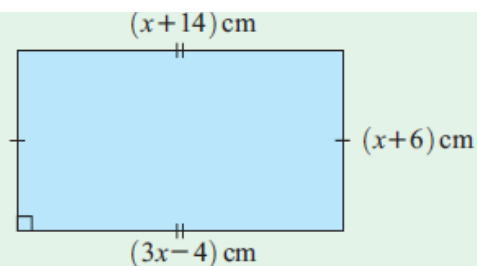
- a** I think of a number, treble it, then add 4. If the result is 28, find the number.
- b** When twice a certain number is subtracted from 21, the result is 9. Find the number.

2 Set up an equation and hence find the value of x :



- 3** A rectangle has length 6 cm longer than its width. If its perimeter is 56 cm, find its length.
- 4** A CD costs twice as much as a book. If I buy 3 CDs and 2 books for a total of €120, find the cost of each item.

5 Find the perimeter of the rectangle.
Your answer must *not* contain x .



- 6** The sum of three consecutive numbers is 72. Find the largest of the three numbers.
- 7** Scott has 12 more 50-pence coins than 20-pence coins, and their total value is £10.20. How many 20-pence coins does Scott have?

THE END

ANSWERS

- a** $3z + 6$ **b** $9z - 6$ **c** $20z - 30y$ **d** $7x + 21z + 7$
e $12 - 18a - 30b$ **f** $20z - 8x + 12y$
g $6ax - 8ay + 14a$ **h** $5x - 2x^2 + 3xy$
i $6p + 2px - 4pq$ **j** $8x - 20y - 8$
k $6m + 12n + 48$ **l** $7x^2 + 21xy + 28x$
m $5x^2 + 15xy + 35xz$ **n** $8ax - 24bx + 8cx$
o $10x^2 + 50x + 1$ **p** $9xy - 9yz + 9py$
q $6a^2 + 30ab + 12ac$ **r** $3x^3 + 9x^2 + 27x$

- 2** **a** $3m^2 + 3m$ **b** $2x$ **c** $a^2 + 6a$ **d** $5x^2 + 10x - 2$
 e $8a^2 + 11a$ **f** $6p + 16q$ **g** $3x^2 + 5xy$
 h $4x^2 + 12x + 12$

- 3** **a** $x + 4$ **b** $6x - 34$ **c** $x - 10$ **d** $y - 18$
 e $3y + 16$ **f** $3b - 15$
- 4** **a** $2x$ **b** $3x^2 - 8x$ **c** $-3x - 8$ **d** $x - 13$
 e $a^2 - 4a$ **f** $-a - 23$

- 5** **a** $P = 3x + 18 \text{ m}$ **b** $P = 6x - 2 \text{ cm}$
 c $P = 10x + 20 \text{ cm}$

- 6** **a** $A = \frac{1}{2}x^2 + x \text{ cm}^2$ **b** $A = x^2 + 2x + 1 \text{ mm}^2$
 c $A = \frac{1}{2}x^2 + \frac{1}{2}x - 3 \text{ m}^2$

EQUATIONS

1.

a $x = 7$ **b** $x = -\frac{1}{4}$ **c** $x = 6$ **d** $x = 4\frac{1}{3}$
e $x = -5$ **f** $x = 0$

2.

a $a = 4$ **b** $x = -12$ **c** $y = 21$ **d** $x = 3$
e $m = 12$ **f** $x = 11$ **g** $a = 20$ **h** $x = 2$
i $m = 8$

3.

e $x = 1\frac{1}{5}$ **f** $x = 1\frac{1}{10}$ **g** $x = -1\frac{2}{3}$ **h** $x = -1\frac{1}{3}$
i $x = -5$ **j** $x = -13$ **k** $x = -2\frac{1}{7}$ **l** $x = 3\frac{1}{3}$
m $x = -2$ **n** $x = 1\frac{4}{7}$

WORDED QUESTIONS

- 1** **a** 8 **b** 6 **2** **a** $x = 4$ **b** $x = 6$ **c** $x = 32$
3 17 cm **4** books cost €15, CDs cost €30 **5** 76 cm **6** 25
7 6 of them