9CMN COVER WORK TUE 2C MAR P5

From Pink textbooks at back of room or from next door in M35. (Usually in bookcase under whiteboard in M35)

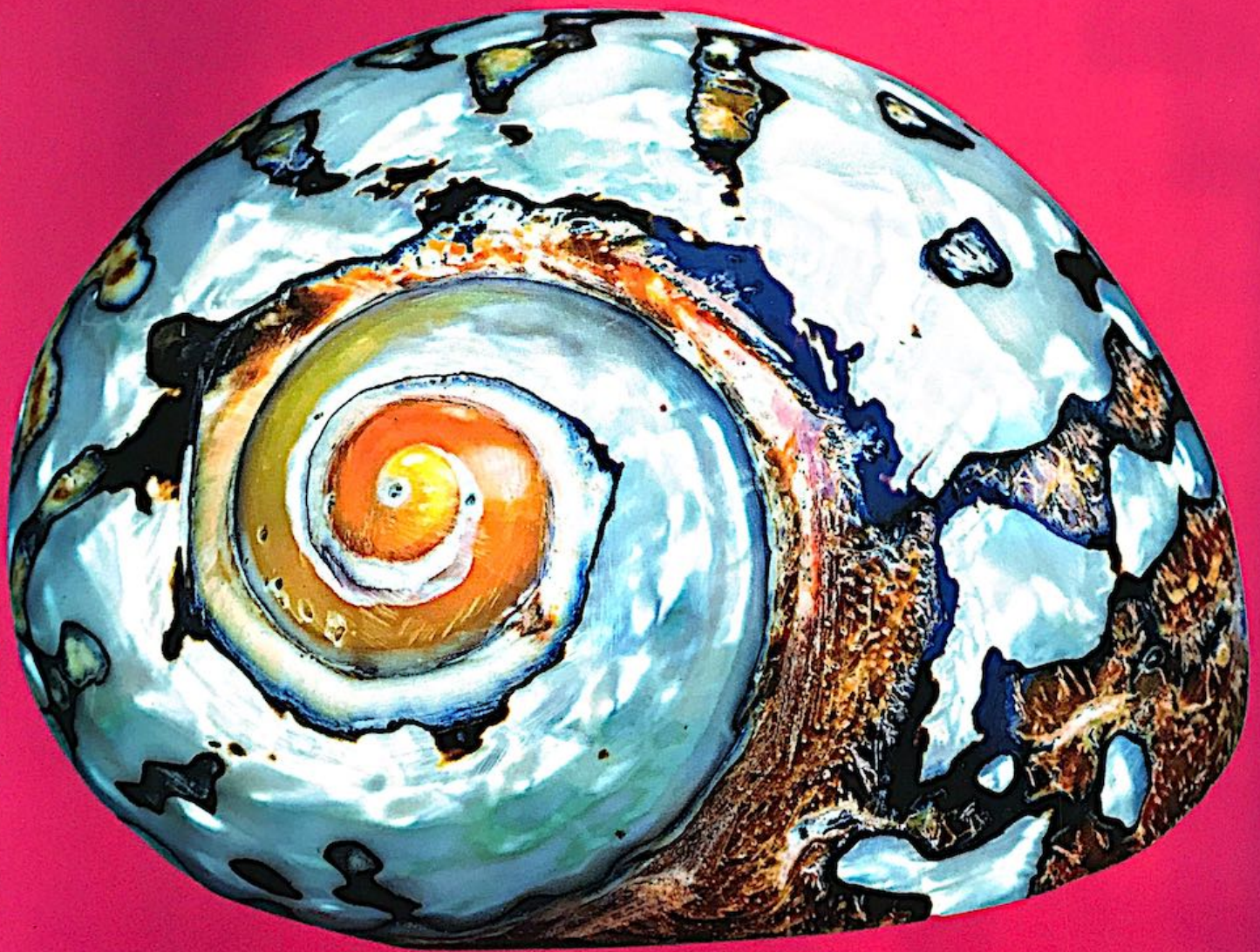Exercise 2.25 on Page 27

Exercise 2.35 on Page 31

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Exercise 2.2S

1 Write these expressions in index form.

  a $y \times y \times y \times y$

  b $m \times m \times m \times m \times m \times m$

  c $6 \times v \times v \times w \times w \times w$

  d $2 \times r \times r \times r \times r \times s$

  e $2 \times m \times m \times 3 \times n$

  f $4 \times y \times y \times y \times 2 \times z \times z$

2 Simplify

  a $3m^2 \times 2$ **b** $3 \times 4p^3$

  c $2x \times 3y^2$ **d** $5r^2 \times 2s^2$

3 Kyle thinks that $a^5 \times a^2 = a^{10}$. Do you agree with Kyle? Give your reasons.

4 Simplify

  a $n^2 \times n^3$ **b** $s^3 \times s^4$

  c $p^3 \times p$ **d** $t \times t^3$

5 Write each of these as a single power in the form x^n.

  a $x^2 \times x^2 \times x^3$ **b** $x \times x^5 \times x^2$

  c $x^3 \times x^2 \times x^4$ **d** $x^5 \times x \times x$

6 Write each of these as a single power in the form r^n.

  a $r^4 \div r^2$ **b** $r^5 \div r^4$

  c $r^7 \div r^2$ **d** $r^8 \div r^5$

7 Simplify

  a $\dfrac{m^6}{m^2}$ **b** $\dfrac{x^4}{x^3}$ **c** $\dfrac{t^7}{t^5}$ **d** $\dfrac{y^4}{y}$

8 Simplify

  a $\dfrac{x^2 \times x^3}{x^4}$ **b** $\dfrac{m^3 \times m}{m^2}$

  c $\dfrac{s^2 \times s^4}{s^3}$ **d** $\dfrac{v \times v^3 \times v^3}{v^4}$

  e $\dfrac{q^2 \times q^3 \times q^2}{q^4}$ **f** $\dfrac{t^3 \times t \times t^2}{t^2}$

  g $\dfrac{p^4 \times p^2 \times p^2}{p^7}$ **h** $\dfrac{y^2 \times y^4 \times y}{y^3 \times y^2}$

9 Simplify these expressions, giving your answer in index form.

  a $x^{10} \times x \times x^4$ **b** $x^4 \times x^{11} \div x^3$

  c $x^5 \times x^7 \times y^3 \div y$ **d** $x^6 \times y^3 \times x^9 \times y^2$

  e $\dfrac{y^4 \times x^8}{x^0 \times y}$ **f** $\dfrac{x^3 \times y^7 \times z^4 \div y^2}{z^3 \times x \times y^3}$

10 Tracey thinks that $4y^5 \times 2y^2 = 6y^7$ because 'the index rules say that you add the powers when two terms are multiplying each other'. Do you agree with Tracey? Give reasons for your answer.

11 Simplify these expressions.

  a $3x^5 \times x^2$ **b** $5y^2 \times y^5$

  c $4b^2 \times 3b^6$ **d** $2p^4 \times 5p^7$

  e $5h^5 \times 6h^6$ **f** $4s^3 \times 3t^4$

12 Andy thinks that $12p^{12} \div 3p^4 = 9p^8$ because 'the index rules say that you subtract the powers when two terms are dividing each other'. Do you agree with Andy? Give reasons for your answer.

13 Simplify these expressions.

  a $10y^6 \div 5y^2$ **b** $6a^9 \div 3a^3$

  c $20k^7 \div 4k^3$ **d** $18p^8 \div 6p^3$

  e $35x^{10} \div 7x^4$ **f** $4x^8 \div 8y^4$

14 Simplify these expressions.

  a $(a^3)^2$ **b** $(y^2)^6$ **c** $(k^3)^5$

  d $(p^7)^8$ **e** $(a^3)^7$ **f** $(a^3)^7$

15 Simplify these expressions.

  a $(2a^3)^2$ **b** $(3y^2)^6$ **c** $(5k^3)^2$

  d $(6p^7)^3$ **e** $(2a^3)^7$ **f** $(4a^4)^4$

16 Simplify these expressions.

  a $y^{-5} \times y^7$ **b** $x^2 \times x^{-4}$

  c $a^{-1} \times a^{-5}$ **d** $h^{-2} \div h^4$

  e $\dfrac{p^3}{p^{-1}}$ **f** $\dfrac{p^{-4}}{p^{-3}}$

17 Simplify

  a $g^8 \times g^{-5}$ **b** $\dfrac{h^{-2}}{h^4}$

  c $(b^{-4})^3$ **d** $j^{-4} \times j^{-2}$

  e $(t^{-5})^{-2}$ **f** $n^{-8} \div n^{-6}$

18 Simplify fully

  a $(2p^8)^2$ **b** $10r^3 \times 6r^{-4}$

  c $(3h^{-3})^3$ **d** $9b^3 \div 3b^{-5}$

  e $(3m^3 \times 2m^{-7})^2 \div 18m$

  f $18(f^{-4})^4 \div 9f^{-16}$

Exercise 2.3S

1 Expand these brackets.

a $4(n + 5)$ **b** $6(b - 7)$

c $a(a + 3)$ **d** $a(b - c)$

e $4(2x + 3y - 4z)$ **f** $2h(h + 9)$

2 Expand these brackets.

a $-3(k + 9)$ **b** $-2(h - 5)$

c $-(w - 4)$ **d** $-(t - p)$

e $-k(k + 7)$ **f** $-9(2m - k + 4)$

g $-(x^2 - x - 8)$ **h** $-2(x^2 + 3)$

i $-3(1 - x)$ Be careful with negatives.

3 Find all the common factors of

a $2x$ and 6

b $4y$ and 12

c 10 and $20j$

d 6 and $12p$

e 9 and $6q$

f $6t$ and 4

g $4x$ and 10

h $24t$ and 8

> Hint for **3a**: 2 and x are factors of 2x. 1, 2, 3 and 6 are factors of 6. 2 is a common factor of 2x and 6.

4 Find the highest common factor of

a $3x$ and 9   **b** $12r$ and 10

c $6m$ and 8   **d** 4 and $4z$

5 Find the highest common factor of

a y^2 and y **b** $4s^2$ and s

c $7m$ and m^3 **d** $2y^2$ and $2y$

6 Factorise these expressions.

a $2x + 10$ **b** $3y + 15$

c $8p - 4$ **d** $6 + 3m$

e $5n + 5$ **f** $12 - 6t$

g $14 + 4k$ **h** $9z - 3$

7 Factorise each of these fully by removing common factors.

a $2x + 4$ **b** $3y - 6$

c $12p + 36q$ **d** $25w - 5$

e $6xy + xw$ **f** $ab - 2bc$

g $pqr + qrt - qsw$ **h** $5xy - x$

7 **i** $2xy + 6x$ **j** $4ab + 6a^2$

k $25p^2 - 10p$ **l** $7x + 14xy$

m $2ac + 4a^2 - 8a$

n $15mn - 5m + 10m^3$

o $6p^4 - 12p$

8 Expand and simplify each of these expressions.

a $3(p + 3) + 2p$ **b** $2(m + 4) + 5m$

c $4(x + 1) - 2x$ **d** $2(5 + k) + 3k$

e $4(2t + 3) + t - 2$ **f** $3(2r + 1) - 2r + 4$

9 Expand and simplify these expressions.

a $3(c + 2) + 7(c + 8)$

b $4(2x + 8) + 5(3x + 7)$

c $x(x + 8) + x(x + 2)$

d $5t(3t + 6) + 2t(t + 1)$

e $3(x - 7) + 4(x - 6)$

f $5(2 - x) + 7(x - 3)$

g $4(m - 6) - 2(m + 1)$

h $3(g - 3) - 7(2g - 6)$

i $2(p + 5) - (p - 4)$

j $(q - 4) - (3 - q)$

10 Factorise these expressions

a $10(x + y) + 13(x + y)$

b $(a - b)^2 + 5(a - b)$

c $6(q + r) - (q + r)^3$

d $(pt - w) + 6(pt - w)$

11 Expand and simplify
$2x(x + 7) + x(9 - x) - 3x(2x - 7)$

12 Expand and simplify

a $3(5x + 9)$

b $2p(4p - 8)$

c $3m(5 - 2m)$

d $3(2y + 9) + 5(3y - 2)$

e $5x(2x + 2y - 9)$

f $4(t + 9) - 3(2t - 7)$

g $(7h + 9) - (3h - 7)$

h $x(3x^2 + x^3)$

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