Ordered strictly alphabetically

- p2 algebraGraph,
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- p6 solvingSimultaneous,
- p7 solvingReady,
- p8 valueAlgebra,
- p8 writeAlgebra,

algebraGraph

- 9. draw e.g. x = 3 or y = 2 or $y = \pm x$ or x + y = 5 {no table of values}
- 8. draw eg y = 3x + 2 {no table of values}
- 7. scaffold to complete the table of values for e.g. x = 3 or y = 2 or $y = \pm x$ or x + y = 5 scaffold is choice of two incomplete table of values
- 6. scaffold to work out y, when x = 0 and x = 1 for e.g. y = 3x + 2 scaffold is an example of the cover up method
- 5. scaffold to complete table of values and draw e.g. y = 3x + 2 scaffold is given x = 0and x = 1 values in the table
- 4. scaffold to complete table of values and draw e.g. x = 3 or y = 2 or x + y = 5 or y = x scaffold is easy scale, given half complete table and hints about which points are easier to plot first
- 3. scaffold to complete table of values and draw the line e.g. y = 3x + 2 scaffold is easy scale, given half complete table and hints about which points are easier to plot first
- 2. scaffold to draw the line e.g. y = 3x + 2 or y = 16 2x or x + y = 12 scaffold is easy scale, given 3 points plotted, and an almost complete table of values
- 1. scaffold to draw the line e.g. y = 3x + 2 or y = 16 2x or x + y = 12 scaffold is easy scale, given 3 points plotted NO TABLE

expandLinear

- 11. expand and simplify e.g. 4(3-2x) (3x-1)
- 10. expand e.g. -3(4x 3y) or -(4x 3y)
- 9. expand e.g. 3(4x 3y)
- 8. expand and simplify e.g. 4(2x-3) + (3x-1)
- 7. expand and simplify e.g. 4(2x 3) + 2(3x 1)
- 6. expand 4(3-2x){order may surprise some learners}
- 5. expand e.g. 4(2x 3)
- 4. expand e.g. 5(x+3) or 5(x-3)
- 3. scaffold to expand e.g. 5(x+3) or 5(x-3) scaffold is claw and arrow to invisible ... sign
- 2. scaffold to expand e.g. 5(y 3) scaffold is claw and arrow to invisible \times sign and hints $5 \times y = \ldots$ and $5 \times 3 = \ldots$ and incomplete answer line \ldots \ldots
- 1. scaffold to expand e.g. 5(y+3) scaffold is claw and arrow to invisible \times sign and hints $5 \times y = \ldots$ and $5 \times 3 = \ldots$ and incomplete answer line $\ldots + \ldots$

expandQuadratic

- 12. expand and simplify e.g. (4x 3y)(2x y)
- 10. expand and simplify e.g. (2x-3)(3x-1)
- 9. expand e.g. 4x(2x-3)
- 8. expand e.g. x(2x-3)
- 7. expand and simplify e.g. (x+4)(x-4) {always difference of two squares}
- 6. expand and simplify e.g. (x-3)(x-4) {always negative \times negative}
- 5. expand and simplify e.g. (x-3)(x+4) {never negative × negative}
- 4. expand e.g. x(x-4)
- 3. scaffold to expand and simplify e.g. (x + 4)(x 3) {exactly one subtract sign} scaffolds for claw and boxes method
- 2. scaffold to expand and simplify e.g. (x + 4)(x + 3) {only plus} scaffolds for claw and boxes method
- 1. scaffold to expand e.g. y(y+4) or x(x-3) scaffold is claw and arrow to invisible ... sign

factorise

- 8. factorise quadratics of the form $x^2 \pm bx c$ {only a few ways to factorise c}
- 7. factorise quadratics of the form $x^2 \pm bx + c$ {only a few ways to factorise c}
- 6. factorise e.g. $y^2 49$
- 5. factorise e.g. $6xy 9y^2$
- 4. factorise e.g. $p^2 + 5p$
- 2. factorise e.g. 5x + 10

inequality

- 7. write the error interval for e.g. x = 7.2 to 1 d.p. {NOT 7.0}
- 6. scaffold to write range of values e.g. L = 18cm to nearest cm scaffold is to complete $\ldots \leq L < \ldots$
- 5. from diagram write the algebraic inequality e.g. x < 3 or v.v.
- 4. from diagram write the algebraic inequality e.g. $-2 \le x < 3$
- 3. from algebraic inequality e.g. $-2 \leq x < 3$ write down all possible values of the integer x
- 2. from diagram write down all possible values of the integer x for e.g. $-2 \le x < 3$ {some <}
- 1. from diagram write down all possible values of the integer x for e.g. $-2 \le x \le 3$ {only \le }

sequenceArithmetic

- 16. is {a given number} a term of the sequence with nth term e.g. 4n 6? explain
- 15. write down the first 3 terms of the sequence where the *n*th term is given by e.g. 3n + 1
- 14. write down e.g. the 20th odd number or write down the nth term of the sequence 1, 3, 5, 7
- 13. explain how you know if {a given number} is a term of e.g. the sequence 1, 5, 9, 13
- 12. given 3 "matchstick" diagrams how many "matchsticks" in e.g. pattern number 6
- 11. find the term to term rule and next term or e.g. 8th term of the sequence e.g. 16, 13, 10, 7
- 10. find e.g. the 10th term of the sequence 1, 5, 9, 13
- 9. find nth term of e.g. the sequence 1, 5, 9, 13
- 8. scaffold to find *n*th term of e.g. the sequence 1, 5, 9, 13 scaffold is given 4n is the *n*th term of 4, 8, 12, 16
- 7. write down the nth term of e.g. the sequence 4, 8, 12, 16
- 6. draw next "matchstick" diagram and complete 2 more values in table
- 5. find the term to term rule and next term of e.g. the sequence 1, 5, 9, 13
- 4. scaffold to find the term to term rule and next term of e.g. the sequence 1, 5, 9, 13 scaffold is hint rule is + ?.
- 3. scaffold to find term to term rule scaffold is e.g. Is rule +2 correct? Explain
- 2. scaffold to complete the next 2 terms of sequence given term to term rule scaffold is terms in speech bubbles and fingers hint
- 1. scaffold to complete the next 2 terms of sequence given e.g. term to term rule is +3 scaffold is terms in speech bubbles and examples counting on using {in this case} 3 fingers

sequenceOther

- 8. scaffold to find *n*th term of e.g. 4 12 24 40 scaffold is told *n*th term of 2 6 12 20 is $n^2 + n$ {adjustment may be e.g. \times 2 or \div 2 or 3 etc}
- 6. **scaffold to** continue sequence of Fibonacci numbers **scaffold is** shown method to generate sequence
- 4. **scaffold to** continue sequence of triangle numbers **scaffold is** shown method to generate sequence

simplifyPQ

- 14. simplify e.g. $(2a^2)^3$
- 13. simplify e.g. $(a^4)^3$
- 12. simplify e.g. $\frac{18a^5b^2}{3a^2b}$
- 11. simplify e.g. $3a^2b \times 4a^3b^4$
- 10. simplify e.g. $q^5 \div q^3$ or $\frac{q^5}{q^3}$ or $q^5 \div q$
 - 9. simplify e.g $a \times 3a$ or $3a \times 2a$
 - 8. simplify e.g. $3a \times b$ or $3a \times 2b$ {but not $3a \times a$ }
 - 7. simplify e.g. $f^3 \times f^2$ {or $f^3 \times f$ }
 - 6. simplify e.g $2a \times 3$ or $2 \times a \times 3$ or $2 \times 3a$ {harder because must do more than miss out \times signs}
- 5. scaffold to simplify e.g. $f^3 \times f^2$ {or $f^3 \times f$ } scaffold is asked to complete writing out question in long winded way first
- 4. simplify e.g. $a \times a \times a \times a \times a$
- 3. e.g. Name wrote $f + f + f + f = f^4$ is Name correct?
- 2. scaffold to simplify e.g. $a \times 2$ and $a \times a$ scaffold is given less mathematical way e.g. a^2 and aa asked to complete in a more mathematical way
- 1. simplify e.g. $2 \times a$ or $3 \times a \times b$ or $a \times b$ {easier because always written in correct algebraic order so just miss out \times signs}

simplifySD

- 10. simplify e.g. 3xy 5xy or $-3y^2 + y^2$
- 9. simplify e.g. 5a + 3b + 7 + 5a 2b 4
- 8. simplify e.g. 3a + 5 + 5a 2
- 7. simplify e.g 3a + 5b + 5a 2b
- 6. simplify e.g. 5a a or 5a + a + a + 2a or 5a 2a 2a {always $\pm a$ }
- 5. simplify e.g. 5a 3a or 3a 5a or -3a + 5a or -3a 5a {never $\pm a$ }
- 4. simplify e.g. -3a 5a
- 3. simplify e.g. a + a + a + a + a
- 2. scaffold to simplify e.g. 5a 3a or 2x 6x or -3y + 7y scaffold is diagram {never $\pm a$ }
- 1. simplify e.g. 3a + 5a

solve

- 9. solve linear: solution is fraction
- 8. solve {2 stage equation, including $\frac{x+3}{4}$ and $\frac{x}{4} + 3$, solution: integer including 0 small negative and large e.g. 97}
- 6. solve e.g. $2f + 3 = 17 5f\{x \text{ on both sides, one subtracted: solution is small positive integer}\}$
- 5. solve e.g. $4e + 7 = 6e + 1\{x \text{ on both sides, none subtracted: solution is small positive integer}\}$
- 4. solve e.g. d + d + d = 54 or 7d 2d = 35
- 3. solve e.g. 3c + 5 = 17 or 3(c 5) = 21
- 2. solve e.g. 3b = 36 or $\frac{b}{3} = 9$
- 1. solve e.g. a + 9 = 17 or a 9 = 17

solveSimultaneous

- 10. solve simultaneous {both equations need multiplying, solution: small integer (either sign) or $\Box.5$ }
- 8. solve simultaneous {any of previous skills, however solution, small integer (either sign) or $\Box.5$ }
- 7. scaffold to solve simultaneous {solution: small integer (either sign) or \Box .5 } scaffold is given hint to multiply one equation by negative one
- 6. solve simultaneous {only one equation needs multiplying, then addition makes it easy e.g. 3x + 4y = 10 and 5x 2y = 8 solution: small positive integer}
- 5. solve simultaneous {by intersection of linear graph and curved graph, both drawn}
- 4. solve simultaneous {addition makes it easy e.g. 3x + 4y = 10 and 5x 4y = 6 solution: small positive integer}
- 3. solve simultaneous {one is very easy to solve e.g. 4y = 12 solution: small positive integer}
- 2. solve simultaneous {both with same subject e.g. y = 6x 2 and y = 2x + 1, solution: small positive integer} LESLEY pre requisite is solve (6)
- 1. solve simultaneous {by intersection of 2 linear graphs, both drawn}

solvingReady

- 14. solve {2 operation} e.g $3 \star + 5 = 17$ or $\frac{\star}{5} 2 = 4$ or $3(\star + 5) = 21$ or $\frac{\star 2}{5} = 2$
- 13. scaffold to solve e.g. $3(\star + 5) = 21$ or $\frac{\star 2}{5} = 2$ scaffold is empty 2 operation function diagram
- 12. scaffold to solve e.g. $3(\star + 5) = 21$ or $\frac{\star 2}{5} = 2$ scaffold is clues re order of operation and empty 2 operation function diagram
- 11. scaffold to solve e.g. $3 \star + 5 = 17$ or $\frac{\star}{5} 2 = 4$ scaffold is empty 2 operation function diagram
- 10. scaffold to solve e.g. $3 \star + 5 = 17$ or $\frac{\star}{5} 2 = 4$ scaffold is some clues in 2 operation function diagram and reminder of invisible \times sign or fraction \div sign
- 9. solve a $\{2 \text{ operations}\}$ thinking of a number problem
- 8. scaffold to solve a {2 operations} thinking of a number problem scaffold is empty function diagram
- 7. solve a {1 operation either \times or \div } thinking of a number problem
- 6. scaffold to solve an e.g. \times 4 thinking of a number problem scaffold is empty block and function diagrams
- 5. scaffold to solve an e.g. \div 5 thinking of a number problem scaffold is empty block and function diagrams
- 4. scaffold to use function diagram scaffold is use partially complete function diagram to solve e.g $\star + 7 = 22$ or $22 \star = 7$ {total to 25}
- 3. solve e.g. $\star + 7 = 15$ or $16 \star = 7\{\text{maximum } 8 + 9 = 17\}$
- 2. scaffold to solve e.g. $\star + 7 = 15$ scaffold is given empty block diagram
- 1. scaffold to solve e.g. $\star + 7 = 15$ scaffold is given block diagram and asked to complete the 3 solve equations NOT actually solve

valueAlgebra

- 9. find e.g. cost from word formula {1 or 2 stage }
- 7. write down the value of e.g. C when C = 2a + 3b and a = 5 and b = -2 {never negative times negative}
- 6. write down the value of e.g. C when C = 2a + 3b and a = 5 and b = 2 {both positive}
- 5. write down the value of e.g. C when C = 2a and a = 5 {only positive}
- 4. scaffold to write down weight in terms of b and in kg {given b = 5 kg} scaffold is given picture context e.g. b is weight (sic) of one box
- 3. scaffold to work out the value of e.g. 5b when b = 20, scaffold is given picture context and example such as 3b = 60
- 2. scaffold to work out e.g. number of chairs given c = 7r and r = 2 scaffold is hint re invisible times sign and 7s row of times table grid
- 1. work out e.g. number of packs of crisps given P = b + c + v and b = 7, c = 4 and v = 3

writeAlgebra

- 10. write an expression or a formula e.g. 5a + 3 or T = 5a + 3
- 9. scaffold to write an expression or a formula e.g. 5a + 3 or T = 5a + 3 scaffold is given context which leads from 5a to 5a + 3
- 7. write an expression or a formula e.g. 5a or T = 5a
- 6. scaffold to write an expression or a formula e.g. 5a or T = 5a scaffold is standard multiply word formula {to help learners to recognise contexts which require multiply}
- 5. scaffold to write an expression or a formula e.g. 5a or T = 5a scaffold is write a calculation first {given value of a}
- 4. scaffold to write a formula e.g. M = 7b scaffold is given a word formula
- 3. write an expression e.g. a + b + c
- 2. scaffold to know meanings of calculation, expression and formula scaffold is match or complete given e.g. T = a + b + c and values of a and b and c
- 1. scaffold to write expression e.g. $\mathbf{a} + \mathbf{b} + \mathbf{m}$ scaffold is given another example and a context