Test 7

1) B $\sqrt{-121} = 11i$

2) A $\sqrt{\frac{-81}{100}} = \frac{9i}{10}$ or $\frac{9}{10}i$

3) C $\sqrt{\frac{-16}{7}} = \frac{4i}{\sqrt{7}} \cdot \frac{\sqrt{7}}{\sqrt{7}} = \frac{4\sqrt{7}}{7}i$

4) C $\sqrt{-4} + \sqrt{-8} = 2i + 2i\sqrt{2}$

5) D $(3\sqrt{-6})(5\sqrt{-15}) = (3\sqrt{6}\,i)(5\sqrt{15}\,i) = -15\sqrt{90} =$
$-15\sqrt{9 \cdot 10} = -15 \cdot 3\sqrt{10} = -45\sqrt{10}$

6) B $(i^3)^2 = \underbrace{(i)(i)}\underbrace{(i)(i)}\underbrace{(i)(i)} = (-1)(-1)(-1) = -1$

7) A $\sqrt{81} - \sqrt{-4} = 9 - 2i$

8) B $(7i)(-3i) = (-21)(-1) = 21$

9) C $(2\sqrt{-4})(5\sqrt{-9}) = (10)(2i)(3i) = (60)(-1) = -60$

10) C $[(3i)(4i)]^2 = (-12)^2 = 144$

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11) A The line has a negative slope.

12) D Slope is -2, Y intercept is 2, so equation is Y = -2X + 2.

13) C $(2X)(?) = 6X^2$
Second dimension is 3X.

14) A By definition

15) B She must travel south. Latitude measures distance north and south, starting with 0° at the equator. Lines of longitude run through the north and south poles.

Test 8

1) B $X + 2$

2) C $3 - \sqrt{2}$

3) B $7 + i$

4) A $2 - \sqrt{A}$

5) D $\frac{Y}{(4-3i)} \cdot \frac{(4+3i)}{(4+3i)} = \frac{4Y + 3Yi}{16 + 9} = \frac{4Y + 3Yi}{25}$

6) C $\frac{5Q}{2+\sqrt{7}} \cdot \frac{2-\sqrt{7}}{2-\sqrt{7}} = \frac{10Q - 5Q\sqrt{7}}{4-7} =$
$\frac{10Q - 5\sqrt{7}Q}{-3}$

7) B $\frac{-6}{9 - 3\sqrt{3}} \cdot \frac{9 + 3\sqrt{3}}{9 + 3\sqrt{3}} = \frac{-54 - 18\sqrt{3}}{81 - (9)(3)} =$
$\frac{-54 - 18\sqrt{3}}{54} = \frac{-3 - \sqrt{3}}{3}$

8) C $\frac{2X + 1}{i} \cdot \frac{i}{i} = \frac{2Xi + i}{-1} = -2Xi - i$

9) D $\frac{i}{1 + \sqrt{2}} \cdot \frac{1 - \sqrt{2}}{1 - \sqrt{2}} = \frac{i - \sqrt{2}i}{1 - 2} = \frac{i - \sqrt{2}i}{-1} =$
$\sqrt{2}i - i$ or $i\sqrt{2} - i$

10) D $\frac{3}{2 - \sqrt{Y}} \cdot \frac{2 + \sqrt{Y}}{2 + \sqrt{Y}} = \frac{6 + 3\sqrt{Y}}{4 - Y}$

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11) C By definition: 1 and 8 are also alternate exterior angles

12) A

13) D X - Y = 3 → X = Y + 3

Substitution	Elimination
3(Y + 3) - Y = 13	3X - Y = 13
3Y + 9 - Y = 13	-(X - Y) = -3
2Y = 4	2X = 10
Y = 2	X = 5
X = (2) + 3	(5) - Y = 3
X = 5	Y = 2
(5, 2)	(5, 2)

(Two ways to solve same problem)

14) B 4 x 180° = 720°

15) B 720° ÷ 6 = 120°

Test 9

1) C $(X + 5)(X + 5) = X^2 + 10X + 25$

2) A $(2A + 4)(2A + 4) = 4A^2 + 8A + 8A + 16 =$
$4A^2 + 16A + 16$

3) B $(X + 4)(X + 4) = X^2 + 8X + 16$

4) A $(2X - 2)(2X - 2) = 4X^2 - 4X - 4X + 4 =$
$4X^2 - 8X + 4$

5) D $(X + 2)^3 = X^3 + 3X^2(2) + 3X(2)^2 + (2)^3 =$
$X^3 + 6X^2 + 12X + 8$ (binomial theorem)

6) B $(A - B)^3 = A^3 - 3A^2B + 3AB^2 - B^3$

7) B

8) C Y^3 (binomial theorem)

9) A $-3(3X)^2 (1) = -27X^2$ (binomial theorem)

10) D $\left(\frac{1}{2}\right)^3 = \frac{1}{8}$

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11) A $\frac{864\,\text{in}^2}{1} \cdot \frac{1\,\text{ft}}{12\,\text{in}} \cdot \frac{1\,\text{ft}}{12\,\text{in}} = \frac{864\,\text{ft}^2}{144} = 6\,\text{ft}^2$

12) D 180° - 129° = 51° (Supplementary angles)

13) C m∠C = 180° - 115° = 65° (Supplementary angles)
m∠B + m∠C = 51° + 65° = 116°
180° - 116° = 64° (180° in a triangle)

14) C

15) B $11 \rightarrow 1 \times 2^1 + 1 \times 2^0 = 2 + 1 = 3$

Test 10

Note: Solutions to the unit tests can be found at the end of this book.

1) A

2) B

3) A

4) C

5) D

6) B 6 + 1 = 7

7) A Coefficient will have 2 factors: (3 - 1)
$\frac{6 \cdot 5}{1 \cdot 2} = 15$ Y exponent = 3 - 1 = 2
X exponent = 6 - 2 = 4 $15X^4Y^2$

8) C Coefficient will have 3 factors (4 - 1)
$\frac{5 \cdot \cancel{4}^{2} \cdot \cancel{3}}{1 \cdot \cancel{2} \cdot \cancel{3}} = 10$ B exponent = 4 - 1 = 3
2A exponent = 5 - 3 = 2
$10(2A)^2B^3 = 40A^2B^3$

9) D Coefficient will have 4 factors (5 - 1)
$\frac{\cancel{4} \cdot \cancel{3} \cdot \cancel{2} \cdot \cancel{1}}{\cancel{1} \cdot \cancel{2} \cdot \cancel{3} \cdot \cancel{4}} = 1$ $\left(-\frac{1}{2}\right)$ exponent is 4
X exponent is 4 - 4 or 0
$(1)(X)^0\left(-\frac{1}{2}\right)^4 = (1)(1)\left(\frac{1}{16}\right) = \frac{1}{16}$

10) D Coefficient will have 1 factor (2-1)
$\frac{7}{1} = 7$ 2Y exponent = 2 - 1 = 1
X exponent = 7 - 1 = 6
$7X^6(2Y)^1 = 14X^6Y$

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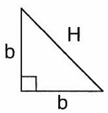
11) A $A^2 + (2A)^2 = H^2$ (Pythagorean Theorem)
$A^2 + 4A^2 = H^2$
$5A^2 = H^2$
$A\sqrt{5} = H$

12) C Area of triangle is $\left(\frac{1}{2}\right)(4)(2\sqrt{3}) = 4\sqrt{3}$
6 triangles can be drawn, so area is
$6 \cdot 4\sqrt{3} = 24\sqrt{3}\,\text{in}^2$

13) C $b^2 + b^2 = H^2$
$2b^2 = H^2$
$\sqrt{2}\,b = H$
(Two sides of a 45° – 45° – 90° triangle are congruent)



14) B A kilogram is a little over 2 pounds

15) C Area of 1st rectangle: XY ft^2
Area of 2nd rectangle: $(2X)(2Y) = 4XY\,\text{ft}^2$