**1** $x$ and $y$ are integers such that

$3 < x < 8$ $\Rightarrow x = 4, 5, 6, 7$ (1)

$4 < y < 10$ $\Rightarrow y = 5, 6, 7, 8, 9$

and $x + y = 14$

Find all the possible values of $x$.

Method: go through all possibilities for $x$, and consider whether there is a possible $y$ such that $x+y=14$

If $x=4$, $y=14-4=10$ ✗ ← not in range of values for $y$

If $x=5$, $y=14-5=9$ ✓

If $x=6$, $y=14-6=8$ ✓

If $x=7$, $y=14-7=7$ ✓

so $x=5,6,7$ work

(1)

5, 6, 7

**(Total for Question 1 is 2 marks)**

**2** Write $\dfrac{(6x^5y^3)^2}{3x^2y^7 \times 4xy^{-3}}$ in the form $ax^by^c$ where $a$, $b$ and $c$ are integers.

Simplify: $\dfrac{6^2 x^{5\times2} y^{3\times2}}{12 x^{2+1} y^{7+-3}}$ ✓1 $= \dfrac{36x^{10}y^6}{12x^3y^4}$ ✓1 Subtract powers $3x^7y^2$

✓1

$3x^7y^2$

**(Total for Question 2 is 3 marks)**

**3** (a) Write $\frac{1}{16}$ in the form $4^n$ where $n$ is an integer.

$\frac{1}{16} = \frac{1}{4^2}$ fraction means negative power $4^{-2}$

$4^{-2}$ √(1)

.....

**(1)**

(b) Work out the value of $8^{\frac{5}{3}} - 9^{\frac{3}{2}}$

find values => $(\sqrt[3]{8})^5 - (\sqrt[2]{9})^3$

$2^5 - 3^3$ √(1)

$32 - 27 = 5$

√(1)

5 √(1)

.....

**(3)**

**(Total for Question 3 is 4 marks)**