

# Diagnostic Worksheet

These questions are not for marks. You can work on them in groups, but please rate the difficulty of each question for yourself. I need to know where you all are at in order to teach the course at the right level. If you don't know what a question is asking, try walking around the room to ask for help. Remember, it doesn't help you just to get the answers because there are no marks for this.

1. Simplify: $3x + 4x$  $7x$	Easy	Medium	Hard
2. Simplify: $3 + 4x - 5 - 5x + 2y - 7y$  $-x - 5y - 2$	Easy	Medium	Hard
3. Solve: $3x = 15$  $x = 5$	Easy	Medium	Hard
4. Solve: $3x + 8 = 29$  $x = 7$	Easy	Medium	Hard
5. Solve: $3x - 10 = 7x + 6$  $x = -4$	Easy	Medium	Hard
6. Express as a single improper fraction: $3 + \frac{2}{5}$  $\frac{17}{5}$	Easy	Medium	Hard
7. Express as a single improper fraction: $\frac{3}{2} - \frac{10}{3}$  $-\frac{11}{6}$	Easy	Medium	Hard
8. Express as a single improper fraction: $4 \times \frac{1}{3}$  $\frac{4}{3}$	Easy	Medium	Hard

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9. Express as a single improper fraction:  $\frac{12}{25} \div \frac{1}{3}$       Easy      Medium      Hard

$$\frac{36}{25}$$

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10. Factor:  $3xy + 15y^2$       Easy      Medium      Hard  
 $3y(x + 5y)$

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11. Factor:  $x^2 + 5x + 6$       Easy      Medium      Hard  
 $(x + 3)(x + 2)$

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12. Factor into prime factors: 40      Easy      Medium      Hard

$$2 \times 2 \times 2 \times 5$$

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13. Simplify:  $y^3 \times y^7$       Easy      Medium      Hard  
 $y^{10}$

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14. Simplify:  $(3x)^2$       Easy      Medium      Hard  
 $9x^2$

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15. Simplify:  $(x + y)^2$       Easy      Medium      Hard  
 $x^2 + 2xy + y^2$

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16. Simplify:  $(3x^2y^4)(2xy^2)$       Easy      Medium      Hard

$$6x^3y^6$$