27. Solve: $-5(x-31)=11.5$

28. Solve: $2.4(v-1.4)=3.6(-v+2.8)$

29. Solve: $\frac{x}{5}+\frac{7}{6}=\frac{6}{5}$

30. Solve: $\frac{3}{4}(3x-5)=\frac{1}{2}(2x+4)$

31. Car Rental Company A charges \$29 a week, plus \$13 per kilometre driven.
Car Rental Company B charges \$85 a week, plus \$6 per kilometre driven.

Determine the distance you must drive for the two rental costs to be the same.
Model the problem with an equation.

Problem

32. Solve: $4(6x-7)-(3x-5)=40$
Show your work.

Math 9 Year End Review Linear Relations, Linear Equations, Polynomials
Answer Section

MULTIPLE CHOICE

1. ANS: B PTS: 1 DIF: Easy
   REF: 4.1 Writing Equations to Describe Patterns LOC: 9.PR1
   TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
2. ANS: C PTS: 1 DIF: Easy
   REF: 4.3 Another Form of the Equation for a Linear Relation LOC: 9.PR1
   TOP: Patterns and Relations (Patterns) KEY: Conceptual Understanding
3. ANS: A PTS: 1 DIF: Moderate
   REF: 4.3 Another Form of the Equation for a Linear Relation LOC: 9.PR1
   TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
4. ANS: C PTS: 1 DIF: Easy REF: 4.4 Matching Equations and Graphs
   LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
5. ANS: C PTS: 1 DIF: Easy
   REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
   TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
6. ANS: A PTS: 1 DIF: Moderate
   REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
   TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
7. ANS: B PTS: 1 DIF: Moderate
   REF: 4.5 Using Graphs to Estimate Values LOC: 9.PR2
   TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge
8. ANS: D PTS: 1 DIF: Moderate REF: 5.1 Modelling Polynomials
   LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
   KEY: Procedural Knowledge
9. ANS: B PTS: 1 DIF: Easy REF: 5.2 Like Terms and Unlike Terms
   LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
   KEY: Procedural Knowledge
10. ANS: B PTS: 1 DIF: Moderate REF: 5.2 Like Terms and Unlike Terms
    LOC: 9.PR5 TOP: Patterns and Relations (Variables and Equations)
    KEY: Procedural Knowledge
11. ANS: D PTS: 1 DIF: Easy REF: 5.3 Adding Polynomials
    LOC: 9.PR6 TOP: Patterns and Relations (Variables and Equations)
    KEY: Procedural Knowledge
12. ANS: B PTS: 1 DIF: Moderate REF: 5.3 Adding Polynomials
    LOC: 9.PR6 TOP: Patterns and Relations (Variables and Equations)
    KEY: Procedural Knowledge
13. ANS: A PTS: 1 DIF: Moderate REF: 5.3 Adding Polynomials
    LOC: 9.PR6 TOP: Patterns and Relations (Variables and Equations)
    KEY: Procedural Knowledge
14. ANS: B PTS: 1 DIF: Easy REF: 5.4 Subtracting Polynomials
    LOC: 9.PR6 TOP: Patterns and Relations (Variables and Equations)
    KEY: Procedural Knowledge

15. ANS: C PTS: 1 DIF: Moderate REF: 5.4 Subtracting Polynomials
LOC: 9.PR6 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
16. ANS: B PTS: 1 DIF: Moderate
REF: 5.5 Multiplying and Dividing a Polynomial by a Constant
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
17. ANS: C PTS: 1 DIF: Moderate
REF: 5.5 Multiplying and Dividing a Polynomial by a Constant
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
18. ANS: D PTS: 1 DIF: Moderate
REF: 5.5 Multiplying and Dividing a Polynomial by a Constant
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
19. ANS: B PTS: 1 DIF: Moderate
REF: 5.5 Multiplying and Dividing a Polynomial by a Constant
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
20. ANS: B PTS: 1 DIF: Easy
REF: 5.6 Multiplying and Dividing a Polynomial by a Monomial
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
21. ANS: A PTS: 1 DIF: Easy
REF: 5.6 Multiplying and Dividing a Polynomial by a Monomial
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
22. ANS: D PTS: 1 DIF: Moderate
REF: 5.6 Multiplying and Dividing a Polynomial by a Monomial
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge
23. ANS: B PTS: 1 DIF: Moderate
REF: 5.6 Multiplying and Dividing a Polynomial by a Monomial
LOC: 9.PR7 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

SHORT ANSWER

24. ANS:
a) ii
b) $y = 15 - 4x$

PTS: 1 DIF: Moderate REF: 4.2 Linear Relations
LOC: 9.PR2 TOP: Patterns and Relations (Patterns)
KEY: Conceptual Understanding | Procedural Knowledge

25. ANS:
$x+y=2$

PTS: 1 DIF: Moderate REF: 4.4 Matching Equations and Graphs
LOC: 9.PR2 TOP: Patterns and Relations (Patterns) KEY: Procedural Knowledge

26. ANS:
-20

PTS: 1 DIF: Easy REF: 6.1 Solving Equations by Using Inverse Operations
LOC: 9.PR3 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

27. ANS:
28.7

PTS: 1 DIF: Moderate REF: 6.1 Solving Equations by Using Inverse Operations
LOC: 9.PR3 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

28. ANS:
$v=2.24$

PTS: 1 DIF: Moderate REF: 6.2 Solving Equations by Using Balance Strategies
LOC: 9.PR3 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

29. ANS:
$x=\frac{1}{6}$

PTS: 1 DIF: Difficult REF: 6.2 Solving Equations by Using Balance Strategies
LOC: 9.PR3 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

30. ANS:
$x=4\frac{3}{5}$

PTS: 1 DIF: Difficult REF: 6.2 Solving Equations by Using Balance Strategies
LOC: 9.PR3 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

31. ANS:
Let d represent the distance driven.
$29+13d=85+6d$

PTS: 1 DIF: Difficult REF: 6.2 Solving Equations by Using Balance Strategies
LOC: 9.PR3 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge

PROBLEM

32. ANS:

$$\begin{aligned}
4(6x-7)-(3x-5) &= 40 \\
24x-28-3x+5 &= 40 \\
24x-3x-28+5 &= 40 \\
21x-23 &= 40 \\
21x-23+23 &= 40+23 \\
21x &= 63 \\
\frac{21x}{21} &= \frac{63}{21} \\
x &= 3
\end{aligned}$$

PTS: 1 DIF: Difficult REF: 6.1 Solving Equations by Using Inverse Operations
LOC: 9.PR3 TOP: Patterns and Relations (Variables and Equations)
KEY: Procedural Knowledge