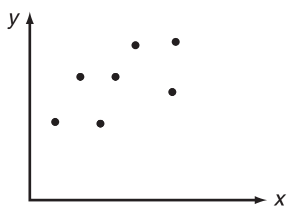
Skills Appendix

Analyse Graphs

- A set of data that can be modelled by a linear relation appears to follow a line when graphed.
- A set of data that can be modelled by a quadratic relation appears to follow a parabola when graphed.
- A set of data that can be modelled by an exponential relation appears to follow a curve when graphed.

Which graphs represent linear, quadratic, or exponential relations, or none?

A



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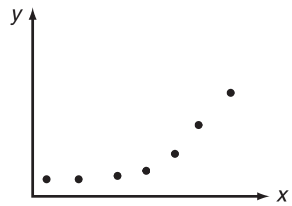

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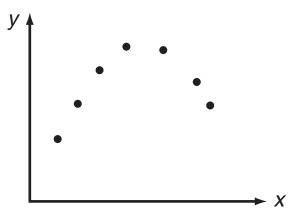
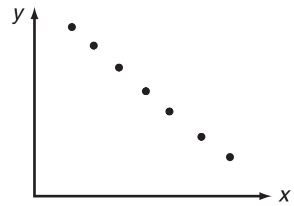


D



Common Factoring

To factor the expression $8x^2y - 12xy$, determine the greatest common factor of both terms. Refer to *greatest common factors* in this appendix.

$8x^2y = 2 \times 2 \times 2 \times x \times x \times y$
$12x^2y = 2 \times 2 \times 3 \times x \times x \times y$

The greatest common factor is $4xy$.
By dividing both terms of the original expression by $4xy$, the second factor is

$$\frac{8x^2y}{4xy} - \frac{12xy}{4xy} = 2x - 3.$$

The factors of $8x^2y - 12xy$ are $4xy$ and $2x - 3$.
Therefore, $8x^2y - 12xy = 4xy(2x - 3)$.

1. Factor.

a) $6n - 9n^2$
b) $24xy^2 + 12y^3$
c) $12x^2y^3z + 16xyz$
d) $15p^3q^2 - 25p^2q$
e) $6a^3b^5 + 16a^2b^3 - 24a^3b^6$
f) $3ab + 21ab^2 - 7a^2b$
g) $5m^3 - 5m^4n^5$
h) $2x(x - 5) - 4(x - 5)$

Skills Appendix

Compound Interest

The formula for compound interest is $A = PV(1 + i)^n$,
where A is the amount, the *future value* of an investment or loan
P is the original principal invested or borrowed
i is the interest rate per conversion period (as a decimal)
n is the number of conversion periods

If interest is compounded once per year, i is the annual interest rate.
If interest is compounded 2 times per year, i is the annual interest ÷ 2, n is the number of years × 2.
If interest is compounded 4 times per year, i is the annual interest ÷ 4, n is the number of years × 4.
If interest is compounded monthly, i is the annual interest ÷ 12, n is the number of years × 12.

Find the amount if $4000 was deposited at 3.25% per year, compounded quarterly for 6 years.

$$\begin{aligned} A &= PV(1 + i)^n \\ &= 4000\left(1 + \frac{0.0325}{4}\right)^{6 \times 4} \\ &= 4000\left(\frac{4.0325}{4}\right)^{24} \\ &= 4857.42 \end{aligned}$$

Therefore, $4857.42 would be the amount after 6 years.

1. **i)** Determine the interest rate per compounding period and the number of compounding periods for the following compound interest situations. Round the interest rate to four decimal places.

ii) Determine the future amount for each situation.

a) $850 is invested at 3.25% annual interest, compounded semi-annually for 10 years
b) $2000 is invested at 3.75% per year, compounded quarterly for 2 years
c) $1375 is invested at 5.85% annual interest, compounded monthly for 3 years
d) $2000 is invested at 2.75% annual interest, compounded daily for 2 years

If the above formula is rearranged, a formula for present value (or principal) can be determined.

$$PV = \frac{A}{(1 + i)^n}$$

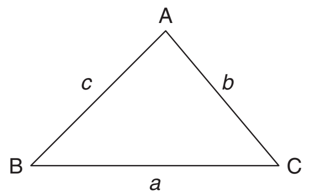
2. Find the present value of each future amount to two decimal places.
a) $1500 in 10 years at 5.25% per year, compounded semi-annually
b) $25 000 in 18 months at 4.65% per year, compounded yearly
c) $750 in 10 years at 5.85% per year, compounded monthly
d) $1250 in 8 years at 3.25% per year, compounded quarterly

Skills Appendix

Cosine Law

For triangle ABC, to find the measure of any side, given two sides and the contained angle, use the following:

$a^2 = b^2 + c^2 - 2bc \cos A$
$b^2 = a^2 + c^2 - 2ac \cos B$
$c^2 = a^2 + b^2 - 2ab \cos C$



1. **a)** Solve $\triangle ABC$, given $\angle A = 32°$, $b = 25.5$ cm, and $c = 22.5$ cm. Round the side measure to one decimal place and the angle measures to the nearest degree.
b) Solve $\triangle DEF$, given $d = 14$ m, $e = 15$ m, and $f = 8$ m. Round the angle measures to the nearest degree.
c) Solve $\triangle XYZ$, given $\angle X = 58°$, $y = 12$ cm, and $z = 18$ cm. Round the side measure to one decimal place and the angle measures to the nearest degree.

Evaluating Expressions

To evaluate the expression $3x(2y - 4)$ for $x = -2$ and $y = 5$, simplify the expression algebraically, if possible. Then, substitute -2 for x and 5 for y. Simplify using the order of operations (BEDMAS).

$$\begin{aligned} 3x(2y - 4) &= 6xy - 12x \\ &= 6(-2)(5) - 12(-2) \\ &= -60 + 24 \\ &= -36 \end{aligned}$$

1. Evaluate each expression for $x = -2$, $y = 5$, and $z = -1$.

a) $3x(2y - 2)$
b) $z(-4x - 2y + 3)$
c) $2x - 3y + 5z$
d) $(-x - y)(-2x + y)$
e) $(-2x - y)(-3x + 2y)$
f) $3y(y - 5)(-2x + 1)$

2. Evaluate each expression for $p = \frac{1}{2}$, $q = \frac{1}{4}$, and $r = \frac{2}{3}$.
Expression your answer as a fraction in lowest terms.

a) $p + q - r$
b) $p + 2q + 3r$
c) $-2pq + r$
d) $p^2 + q^2 - r^2$
e) p^2qr
f) $2p^2 - 4q^2 + 6r^3$

Skills Appendix

Evaluating Radicals

Since $5 \times 5 = 25$, $\sqrt{25} = 5$.

Since $0.25 \times 0.25 = 0.0625$, $\sqrt{0.0625} = 0.25$.

1. Evaluate.

a) $\sqrt{144}$ **b)** $-\sqrt{49}$ **c)** $\sqrt{9\,000\,000}$ **d)** $-\sqrt{(-10)^2}$

To evaluate $\sqrt{82}$, to the nearest tenth, use a calculator.

Therefore, since $\sqrt{82} \doteq 9.055\,385\,138$

$\sqrt{82} = 9.1$, to the nearest tenth

To evaluate $-\sqrt{(-8)^2 + (-9)(-4)}$, use BEDMAS to simplify the expression under the radical symbol. Then, find a number, that when multiplied by itself, gives the number under the radical symbol (the radicand). Use a calculator to help you, if necessary.

$$\begin{aligned} -\sqrt{(-8)^2 + (-9)(-4)} &= -\sqrt{64 + 36} \\ &= -\sqrt{100} \\ &= -10 \end{aligned}$$

2. Evaluate, to the nearest tenth if necessary.

a) $\sqrt{58}$

b) $-\sqrt{156}$

c) $\sqrt{21-3(-5)}$

d) $\sqrt{4(-3)-3^2(-5)}$

e) $\sqrt{-5^2 + 3(-4)^2}$

f) $-\sqrt{355 - 7(20)(-2)}$

Expanding Algebraic Expressions

To expand $5(2a - 4)$, use the distributive property.

$$\begin{aligned} 5(2a - 4) &= 5(2a - 4) \\ &= 5(2a) - 5(4) \\ &= 10a - 20 \end{aligned}$$

1. Expand.

a) $-3(2x - 7)$

b) $2(2x - 3y + 1)$

c) $3a(2a + 7)$

d) $-(4m - 3n - 6p)$

e) $\frac{1}{2}(2p - 12q - 4)$

f) $-\frac{1}{3}x(3x - 15y - 6z)$

Skills Appendix

Exponential Functions

To determine from a table of values whether or not a function is exponential, calculate first and second differences. Include the ratios of the y-values. If the first and second differences are not the same, but the ratios of the y-values are constant, then the function is exponential.
For $y = 3^x$,

x	y	First Differences	Second Differences	Ratios of y-Values
–3	$\frac{1}{27}$	$\frac{1}{9} - \frac{1}{27} = \frac{3}{27} - \frac{1}{27} = \frac{2}{27}$		$\frac{1}{9} \div \frac{1}{27} = 3$
–2	$\frac{1}{9}$	$\frac{2}{9}$	$\frac{2}{9} - \frac{2}{27} = \frac{6}{27} - \frac{2}{27} = \frac{4}{27}$	3
–1	$\frac{1}{3}$	$\frac{2}{3}$	$\frac{4}{9}$	3
0	1	2	$\frac{4}{3}$	3
1	3	6	4	3
2	9	18	12	3
3	27			

Because the ratios of successive y-values are the constant 3, the function $y = 3^x$ is exponential.

1. Determine whether or not each function is exponential. Use a differences table and include the ratios of y-values.

a)

x	y
–2	9
–1	5
0	1
1	–3
2	–7

b)

x	y
–1	$\frac{1}{4}$
0	1
1	4
2	16
3	64

Skills Appendix

First and Second Differences

First and second differences are calculated from tables of values in which the *x*-coordinates are evenly spaced.
First differences are found by subtracting consecutive *y*-values.
Second differences are then calculated by subtracting the values in the first differences column in the same way.

If the first differences are constant, the relation is linear.
If the first differences are not constant, but the second differences are constant, the relation is quadratic.
If neither the first nor the second differences are constant, the relation is non-linear, but not quadratic.

x	*y*	First Differences
1	–4	
		–2 – (–4) = 2
2	–2	
		–2
3	0	
		–2
4	2	

This relation is linear.

x	*y*	First Differences	Second Differences
1	3		
		0 – 3 = –3	
2	0		–1 – (–3) = 2
		–1	
3	–1		2
		1	
4	0		

This relation is quadratic.

1. Use first and second differences to determine if each relation is linear, quadratic, or neither.

a)

x	*y*
1	6
2	3
3	2
4	3

b)

x	*y*
1	1
2	–3
3	–6
4	–9

c)

x	*y*
1	0
2	7
3	29
4	82

d)

x	*y*
1	–11
2	–18
3	–27
4	–38

Skills Appendix

Geometry Vocabulary

An acute angle measures less than 90°.
A right angle measures 90°.
An obtuse angle measures between 90° and 180°.
A straight angle measures 180°.
Complementary angles add up to 90°.
Supplementary angles add up to 180°.
The sum of all angles in a triangle is 180°.

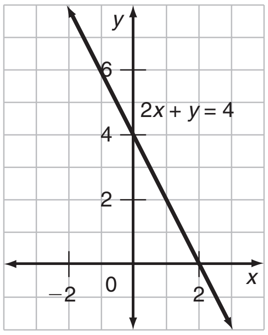
An isosceles triangle has two equal sides.
An equilateral triangle has three equal sides and all angles are equal.
A right triangle has one 90° angle.

A prism is a three-dimensional figure with rectangular faces and a geometric shaped base.
A rectangular prism is a three-dimensional figure with a rectangular base and rectangular faces.
A triangular prism is a three-dimensional figure with a triangular base and rectangular faces.
A cube is a three-dimensional figure with a square base and square faces.

Graphing Linear and Quadratic Equations Using a Table of Values

To graph the relation $2x + y = 4$ using a table of values, choose suitable values for x. Then, find the value of y for each x. Organize the information in a table. Plot the points and draw a line through the points.

x	y
−1	6
0	4
1	2
2	0



1. Graph each equation. Use a table of values to help you.

a) $y = -x + 4$

b) $x + 2y = 6$

c) $3x - y = 1$

d) $y = -\frac{1}{2}x^2$

e) $y = x^2 - 1$

f) $y = -x^2 - x + 2$

Skills Appendix

Greatest Common Factors

To determine the greatest common factor (GCF) of $16ab^2$ and $12a^3b$, write each expression as a product. Then, write the factors that are common to both.

$16ab^2 = 2 \times 2 \times 2 \times 2 \times a \times b \times b$

$12a^3b = 2 \times 2 \times 3 \times a \times a \times a \times b$

The GCF of $16ab^2$ and $12a^3b$ is $2 \times 2 \times a \times b$ or $4ab$.

1. Determine the GCF of each set.

a) $10x$, $15x$
b) $7ab^2c$, $49a^3bc^2$
c) $6n^3$, $12n^2$, $3n^4$
d) $25m^2n^4$, $10m^2n^2$, $15m^3n$
e) $16xyz$, $8x^2z$, $12x^4y^2z$
f) $9xy$, $2xz$, $4xyz$

Lowest Common Multiple

The lowest common multiple (LCM) is the lowest number that each number in a set can divide into evenly.

The lowest common multiple of 4 and 6 is 12. So, 12 is the lowest number that both 4 and 6 can divide into evenly.

1. Find the LCM for each set of numbers.

a) 2, 7
b) 2, 9
c) 2, 4, 6
d) 6, 18
e) 3, 12, 15
f) 4, 8, 16

Multiplying Binomials

Expand by distributing each term in the first binomial to each term in the second binomial. Then, collect like terms.

$$\begin{aligned}(x - 3)(x + 4) &= (x - 3)(x + 4)\\ &= x(x + 4) - 3(x + 4)\\ &= x^2 + 4x - 3x - 12\\ &= x^2 + x - 12\end{aligned}$$

1. Expand and simplify.

a) $(3a - 5)(-a + 3)$
b) $(2m - 4)(-3m - 1)$
c) $-(x - 4y)(2x + y)$
d) $-(-2m - n)(5m - 3n)$

Skills Appendix

Percents

The table shows how equivalent fractions, percents, and decimals can be expressed.

Fraction	Percent (%)	Decimal
$\frac{54}{100}$	54	0.54
$\frac{4}{100} = \frac{1}{25}$	4.0	0.04
$\frac{2}{1000} = \frac{1}{500}$	0.2	0.002
$\frac{120}{100} = \frac{6}{5}$	120.0	1.2

1. Copy and complete the table. Express all fractions in lowest terms.

	Fraction	Percent	Decimal
a)	$\frac{65}{100} = \frac{13}{20}$		
b)	$\frac{1}{8}$		
c)	$2\frac{3}{8}$		
d)	$\frac{150}{100} = \frac{3}{2}$		
e)		24.0%	
f)		0.6%	
g)		4.5%	
h)			0.55
i)			3.21
j)			0.02

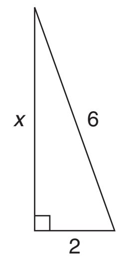
Skills Appendix

Pythagorean Theorem

The Pythagorean theorem states that in a right triangle, the square of the length of the hypotenuse is equal to the sum of the squares of the lengths of the other two sides.

Find the length of x, to the nearest tenth of a unit.

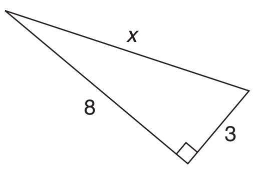
$$\begin{aligned} x^2 + 2^2 &= 6^2 \\ x^2 + 4 &= 36 \\ x^2 &= 36 - 4 \\ x^2 &= 32 \\ x &= \sqrt{32} \\ x &\doteq 5.657 \end{aligned}$$



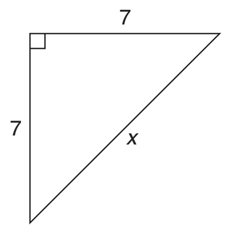
Therefore, x is approximately 5.7 units.

1. Find the length of the unknown side x, to the nearest tenth of a unit.

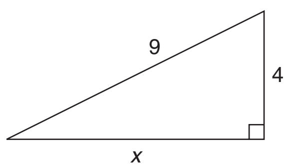
a)



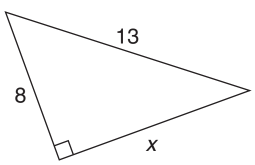
b)



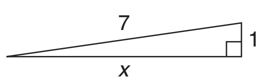
c)



d)



e)



Skills Appendix

Rational Number Skills

i) *Adding and Subtracting*

When adding and subtracting rational numbers, find equivalent rational numbers with the lowest common denominator. Use the order of operations (BEDMAS) to evaluate. Reduce the answer to lowest terms where possible.

$$\begin{aligned}\frac{2}{3}-\frac{5}{6}&=\frac{4}{6}-\frac{5}{6}\\&=-\frac{1}{6}\end{aligned}$$

ii) *Multiplying and Dividing*

When multiplying rational numbers, multiply the numerators together and multiply the denominators together. Reduce the answer to lowest terms where possible.

$$\begin{aligned}\frac{3}{5}\times\left(-\frac{10}{11}\right)&=-\frac{30}{55}\\&=-\frac{6}{11}\end{aligned}$$

When dividing rational numbers, multiply the first rational number by the *reciprocal* of the second rational number. Reduce to lowest terms where possible.

$$\begin{aligned}\frac{2}{3}\div\frac{6}{7}&=\frac{2}{3}\times\frac{7}{6}\\&=\frac{14}{18}\\&=\frac{7}{9}\end{aligned}$$

1. Evaluate, without using a calculator.

a) $\frac{1}{5}+\frac{1}{2}$

b) $\frac{1}{9}-\frac{3}{8}$

c) $\left(-\frac{3}{7}\right)\times\frac{7}{8}$

d) $\left(-\frac{4}{15}\right)\times\left(-\frac{5}{6}\right)$

e) $\frac{7}{6}\div\left(-\frac{7}{12}\right)$

f) $\frac{1}{6}\div 9$

Skills Appendix

Rearranging and Evaluating Formulas

To isolate a certain variable in a formula, rearrange the formula by using rules for solving equations.
If $D = vt$, to isolate t, divide both sides by v. Therefore, $t = \frac{D}{v}$.

1. Rearrange each formula to solve for the indicated variable.

a) $D = vt$, for v
b) $y = mx + b$, for b
c) $x^2 = a^2 + b^2$, for a
d) $d = \frac{k}{t}$, for t
e) $\frac{p}{q} = \frac{s}{t}$, for q
f) $s = \frac{1}{2}dt$, for d
g) $V = \frac{1}{3}\pi r^2 h$, for r
h) $\text{S.A.} = \pi r^2 + \pi rs$, for s

To evaluate for a specific variable in a formula, given the values of the other variables, isolate the unknown variable. Substitute the known values for the other variables and solve.

If $D = vt$, where $D = 32$ km and $t = 2$ h, find v.

$D = vt$
$32 = 2v$
$16 = v$

Therefore, $v = 16$ km/h.

2. Evaluate each formula for the given values. Round your answers to one decimal place where needed.

a) $P = 2(l + w)$, for $l = 15$ cm and $w = 4$ cm

b) $P = 4s$, for $s = 3.2$ cm

c) $A = \frac{bh}{2}$, for $b = 2.5$ cm and $h = 1.8$ cm

d) $V = \frac{4}{3}\pi r^3$, for $r = 6$ m

e) $S = 2\pi r^2 + 2\pi rh$, for $r = 8$ m and $h = 12$ m

Simple Interest

The formula for simple interest is $I = Prt$
where I is the simple interest
P is the principal (the amount of money borrowed or invested)
r is the annual interest rate (as a decimal)
t is the time in years

Calculate the simple interest earned if \$1000 is invested at 5.2% annual interest for 18 months (1.5 years).

$I = Prt$
$= 1000 \times 0.052 \times 1.5$
$= 78$

Therefore, the simple interest earned is \$78.00.

Skills Appendix

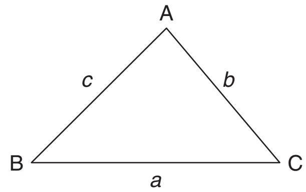
1. Calculate the simple interest earned in each situation. Round your answer to two decimal places.

a) \$1500 earns 3.25% annual interest, for 5 years
b) \$3700 earns 2.25% per year, for 6 months
c) a \$900 GIC earns 3.8% interest per year, for 8 years
d) a \$3500 term deposit earns 3.15% annual interest, for 90 days

Sine Law

- An acute triangle, ABC, can be solved using the sine law if you know:
  –two angle measures and one side measure
  –an angle measure and two side measures, provided one of the sides is opposite the given angle
- The measure of a side can be determined using:

$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$



- The measure of an angle can be determined using:

$$\frac{\sin A}{a} = \frac{\sin B}{b} = \frac{\sin C}{c}$$

1. a) Solve ΔABC, given ∠B = 39°, ∠C = 79°, and a = 24 cm.
b) Solve ΔDEF, given ∠D = 75°, d = 25 m, and e = 10 m.
c) Solve ΔXYZ, given ∠Y = 70°, ∠Z = 50°, and y = 15 cm.

Substituting Into Equations

If $y = -3x - 2$, find y when $x = -4$.

Substitute –4 for x in the equation and evaluate. Use the order of operations (BEDMAS).

$y = -3x - 2$
$= -(-4) - 2$
$= 4 - 2$
$= 2$

1. Solve for y.

a) $y = x - 9$, when $x = 2$

b) $y = -\frac{3}{4}x + \frac{1}{2}$, when $x = -2$

c) $y = 2x^2 + \frac{2}{3}x - 1$, when $x = -3$

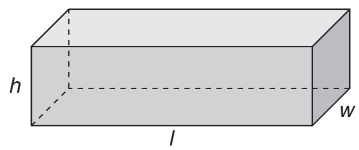
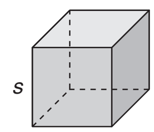
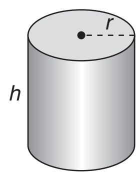
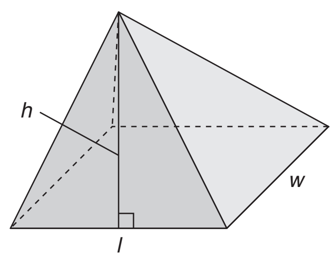
d) $-5x + y = -3$, when $x = -\frac{1}{5}$

e) $-2x^2 + 3y^2 = 27$, when $x = 0$

Skills Appendix

Surface Area

Surface area is the space covered by a three-dimensional figure. Surface area is measured in square units. The table shows the surface area formulas for some three-dimensional figures.

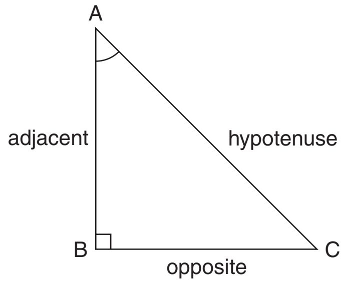
Three-Dimensional Figure	Diagram	Surface Area Formula
rectangular prism		S.A. = $2(h \times l) + 2(h \times w) + 2(w \times l)$
cube		S.A. = $4s^2$
cylinder		S.A. = $2\pi r^2 + 2\pi rh$
rectangular-based pyramid		S.A. = $lw + 4\left(\frac{1}{2}lh\right)$

1. Determine the surface area of each of the following figures. Round answers to two decimal places, where necessary.
- **a)** rectangular prism: length = 75 cm, width = 28 cm, height = 25 cm
- **b)** cube: length = 4.4 mm
- **c)** cylinder: radius = 21 cm, height = 65 cm
- **d)** pyramid: length = 2.0 m, width = 2.0 m, height = 3.8 m

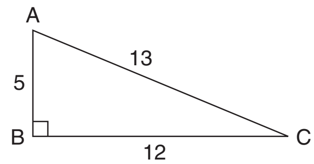
Skills Appendix

Trigonometric Ratios

In a right triangle, relative to ∠A, AB is the adjacent side, BC is the opposite side, and AC is the hypotenuse.



The sine ratio (sin) is the ratio of the opposite side to the hypotenuse.
The cosine ratio (cos) is the ratio of the adjacent side to the hypotenuse.
The tangent ratio (tan) is the ratio of the opposite side to the adjacent side.



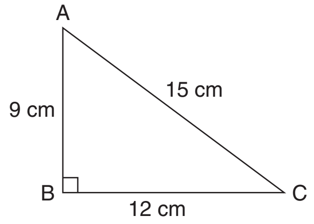
$\sin A = \dfrac{\text{opposite}}{\text{hypotenuse}} = \dfrac{12}{13}$

$\cos A = \dfrac{\text{adjacent}}{\text{hypotenuse}} = \dfrac{5}{13}$

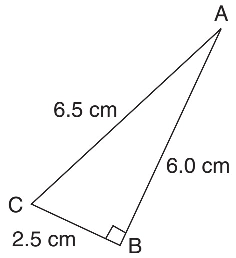
$\tan = \dfrac{\text{opposite}}{\text{adjacent}} = \dfrac{12}{5} = 2\dfrac{2}{5}$

1. Find the sine, cosine, and tangent ratios for ∠A. Express the ratios as fractions in lowest terms.

a)



b)



Scientific or Graphing Calculator Use
To find trigonometric ratios if the angle measures are known, press the ratio button and then enter the measure or vice versa. The sequence of keystrokes will depend on your calculator.
To find sin 50º, on your calculator press SIN 50 Enter or 50 sin Enter or =.
sin 50º = 0.7660

2. Use a calculator to evaluate each trigonometric ratio to four decimal places.

a) cos 27° **b)** tan 20° **c)** sin 25°
d) tan 40° **e)** sin 75° **f)** cos 85°

To find the angle measure if two sides are known, determine the ratio corresponding to the known sides and find its decimal equivalent. Press 2nd *trigonometric ratio button* then *decimal value* Enter or *decimal value* 2nd *trigonometric ratio button* Enter or =.

To find the measure of an angle to the nearest degree, given that the adjacent side to the angle is 12 cm and the hypotenuse is 13 cm, find the decimal equivalent to the cosine ratio.

$$\cos\theta = \frac{12}{13}$$
$$\doteq 0.9231$$

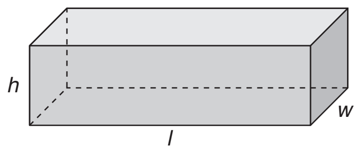
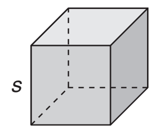
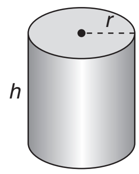
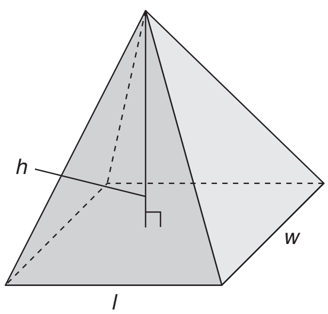
$$\theta = \cos^{-1}(0.9231)$$ 2nd COS 0.9231 Enter or 0.9231 2nd cos =
$$\doteq 22.6º$$
Therefore, $\theta \doteq 23°$.

3. Find the measure of each angle, to the nearest degree.
a) sin X = 0.7314 **b)** cos Y = 0.2588

c) tan Z = 3.7321 **d)** sin A = 0.9986

Skills Appendix

Volume

Three-Dimensional Figure	Diagram	Volume Formula
rectangular prism		$V = l \times w \times h$
cube		$V = s^3$
cylinder		$V = \pi r^2 h$
rectangular-based pyramid		$V = \frac{1}{3} lwh$

1. Determine the volume of each of the following figures. Round answers to two decimal places, where necessary.

a) rectangular prism: length = 75 cm, width = 28 cm, height = 25 cm
b) cube: length = 4.4 mm
c) cylinder: radius = 21 cm, height = 65 cm
d) pyramid: length = 2.0 m, width = 2.0 m, height = 3.8 m

Skills Appendix

Working With Powers

For the power 3^5, 3 is the base and 5 is the exponent.
The expanded form of 3^5 is $3 \times 3 \times 3 \times 3 \times 3$.

1. Write each power in expanded form. Do not evaluate.

a) 3^3 **b)** $\left(\frac{1}{4}\right)^4$ **c)** $(-2)^5$ **d)** $\left(-\frac{3}{4}\right)^5$

Evaluating Powers

To evaluate the power 4^3, expand and calculate.

$$\begin{aligned} 4^3 &= 4 \times 4 \times 4 \\ &= 64 \end{aligned}$$

To evaluate the power 4^{-3}, express the power with a positive exponent. Then, expand and calculate.

$$\begin{aligned} 4^{-3} &= \left(\frac{4}{1}\right)^{-3} \\ &= \left(\frac{1}{4}\right)^3 \\ &= \frac{1}{4} \times \frac{1}{4} \times \frac{1}{4} \\ &= \frac{1}{64} \end{aligned}$$

2. Evaluate each power. Round your answers to four decimal places.

a) 4^3 **b)** 6^5

c) 0.25^4 **d)** $(-2)^{-6}$

e) 2.7^{-3} **f)** -5.1^4