Year 9 NAPLAN-style numeracy practice test

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Name: _____ Date: _____

Do questions 1 to 5 without a calculator. You can use a calculator for the rest. Suggested time: about 30 minutes.

Non-calculator (Questions 1-5)

Question 1

The distance from Earth to the Sun is approximately 150,000,000 km. Which of the following expresses this distance in scientific notation?

(A) 1.5×10^7 km

(B) 15×10^8 km

(C) 15×10^7 km

(D) 1.5×10^8 km

Question 2

A school canteen sold 80 meat pies on Monday. On Tuesday, sales increased by 15%. How many meat pies were sold on Tuesday?

Answer: _____

Question 3

A circular garden in a Sydney park has a radius of 5 m. What is the area of the garden? Use $\pi = 3.14$.

(A) 62.8 m²

(B) 78.5 m²

(C) 15.7 m²

(D) 31.4 m²

Question 4

A right-angled triangle has two shorter sides of length 6 cm and 8 cm. What is the length of the hypotenuse in centimetres?

Answer: _____

Question 5

Five students recorded how many laps they swam at training: 4, 7, 6, 9, and 4. What is the mean number of laps?

(A) 9

(B) 5

(C) 7

(D) 6

Calculator allowed (Questions 6-20)

Question 6

Lachlan and Priya share a prize of $360 in the ratio 5 : 4. How many dollars does Lachlan receive?

Answer: _____

Question 7

Solve for x: 3x + 7 = 28

(A) x = 11

(B) x = 7

(C) x = 12

(D) x = 9

Question 8

A cylindrical water tank has a radius of 3 m and a height of 4 m. What is the volume of the tank in cubic metres? Use π = 3.14.

(A) 113.04 m^3

(B) 150.72 m^3

(C) 37.68 m^3

(D) 75.36 m^3

Question 9

A straight line passes through the points (0, 3) and (4, 11). Which of the following is the equation of the line?

(A) y = 4x + 3

(B) $y = 2x + 3$

(C) $y = 2x + 4$

(D) $y = 3x + 3$

Question 10

Amelia invests $2500 in a savings account that pays simple interest at a rate of 4% per year. How much interest in dollars will she earn after 3 years?

Answer: _____

Question 11

Simplify $(x^8)/(x^3)$.

(A) x^2

(B) x^{11}

(C) x^{24}

(D) x^5

Question 12

Factorise fully: $6m^2 + 9m$.

(A) $6m(m + 3)$

(B) $3(2m^2 + 3m)$

(C) $3m(2m + 3)$

(D) $m(6m + 9)$

Question 13

A Year 9 group of 40 students was surveyed about whether they play sport and whether they play a musical instrument. The results are shown in the table below.

	Plays sport	**Does not play sport**	**Total**
Plays instrument	8	12	20
Does not play instrument	14	6	20
Total	22	18	40

A student is chosen at random. What is the probability that the student plays sport given that they play an instrument?

(A) ⅕

(B) 11/20

(C) ⅖

(D) 8/40

Question 14

A swimming pool is in the shape of a rectangular prism. It is 25 m long, 10 m wide, and 2 m deep. How many cubic metres of water does the pool hold when full?

Answer: _____

Question 15

Mia drives from Brisbane to the Sunshine Coast, a distance of 108 km, in 1 hour and 12 minutes. What is her average speed in kilometres per hour?

Answer: _____

Question 16

Expand and simplify: $(x + 5)(x - 3)$

(A) $x^2 + 8x - 15$

(B) $x^2 + 2x + 15$

(C) $x^2 + 2x - 15$

(D) $x^2 - 15$

Question 17

A mountain bike originally priced at $840 is marked down by 35%. What is the sale price of the bike in dollars?

Answer: _____

Question 18

Two triangles are similar. The sides of the smaller triangle are 4 cm, 6 cm, and 9 cm. The longest side of the larger triangle is 27 cm. What is the perimeter of the larger triangle in centimetres?

(A) 63 cm

(B) 57 cm

(C) 45 cm

(D) 51 cm

Question 19

A bag contains 4 red marbles and 6 blue marbles. A marble is drawn at random, its colour recorded, and then it is returned to the bag. A second marble is then drawn. What is the probability that both marbles drawn are red?

(A) 4/25

(B) 12/25

(C) 8/45

(D) ⅖

Question 20

A school hall floor is made up of a rectangle and a semicircle attached to one end. The rectangle is 20 m long and 10 m wide. The semicircle has a diameter of 10 m (the same as the width of the rectangle). What is the total area of the floor in square metres? Use π = 3.14.

Answer: _____

Year 9 NAPLAN-style numeracy: answers and worked solutions

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Question 1: (D) 1.5×10^8 km

Move the decimal point so there is one non-zero digit before it: $150{,}000{,}000 = 1.5 \times 10^8$. The power of 10 is 8 because we move the decimal 8 places to the left. **Answer:** 1.5×10^8 km

Question 2

Find 15% of 80: $0.15 \times 80 = 12$. Add to the original: $80 + 12 = 92$. **Answer:** 92

Question 3: (B) 78.5 m^2

Area of a circle = $\pi r^2 = 3.14 \times 5^2 = 3.14 \times 25 = 78.5$ m^2. **Answer:** 78.5 m^2

Question 4

$c^2 = 6^2 + 8^2 = 36 + 64 = 100$. So $c = \sqrt{(100)} = 10$ cm. **Answer:** 10

Question 5: (D) 6

Add the values: $4 + 7 + 6 + 9 + 4 = 30$. Divide by the number of students: $30 \div 5 = 6$. **Answer:** 6

Question 6

The total number of parts is $5 + 4 = 9$.

The value of one part is $360 \div 9 = 40$.

Lachlan receives $5 \times 40 = 200$ dollars.

Answer: $200

Question 7: (B) $x = 7$

Subtract 7 from both sides: $3x = 28 - 7 = 21$.

Divide both sides by 3: $x = 21 \div 3 = 7$.

Answer: $x = 7$

Question 8: (A) 113.04 m^3

Volume of a cylinder = $\pi r^2 h$.

$= 3.14 \times 3^2 \times 4$

= 3.14 × 9 × 4 = 3.14 × 36 = 113.04 m^3.

Answer: 113.04 m^3

Question 9: (B) y = 2x + 3

The gradient is m = (11 - 3)/(4 - 0) = 8/4 = 2.

The y-intercept is 3 (the line passes through (0, 3)).

So the equation is y = 2x + 3.

Answer: y = 2x + 3

Question 10

Simple interest = P × r × t.

= 2500 × 0.04 × 3

= 2500 × 0.12 = 300.

Answer: $300

Question 11: (D) x^5

When dividing powers with the same base, subtract the indices: $x^8 \div x^3 = x^{8-3} = x^5$.

Answer: x^5

Question 12: (C) 3m(2m + 3)

Find the highest common factor (HCF) of $6m^2$ and 9m. The HCF is 3m.

Divide each term: $6m^2 \div 3m = 2m$ and $9m \div 3m = 3$.

So $6m^2 + 9m = 3m(2m + 3)$.

Answer: 3m(2m + 3)

Question 13: (C) ⅖

We want P(plays sport | plays instrument). Look only at the 20 students who play an instrument.

Of those 20, exactly 8 also play sport.

P = 8/20 = ⅖.

Answer: ⅖

Question 14

Volume of a rectangular prism = length × width × height.

V = 25 × 10 × 2 = 500 m^3.

Answer: 500 m^3

Question 15

Convert 1 hour 12 minutes to hours: 112/60 = 1.2 hours.

Speed = distance/time = (108)/(1.2) = 90 km/h.

Answer: 90 km/h

Question 16: (C) $x^2 + 2x - 15$

Use FOIL: $x \times x = x^2$, $x \times (-3) = -3x$, $5 \times x = 5x$, $5 \times (-3) = -15$.

Collect like terms: $x^2 + (-3x + 5x) - 15 = x^2 + 2x - 15$.

Answer: $x^2 + 2x - 15$

Question 17

Find the discount: $35\% \times 840 = 0.35 \times 840 = 294$, so the discount is $294.

Subtract from original price: 840 - 294 = 546, so the sale price is $546.

Answer: $546

Question 18: (B) 57 cm

Find the scale factor: 27 ÷ 9 = 3.

Multiply each side of the smaller triangle by 3: 4 × 3 = 12 cm, 6 × 3 = 18 cm, 9 × 3 = 27 cm.

Perimeter = 12 + 18 + 27 = 57 cm.

Answer: 57 cm

Question 19: (A) 4/25

The probability of drawing a red marble each time is 4/10 = ⅖ (since the marble is replaced).

For two red marbles: ⅖ × ⅖ = 4/25.

Answer: 4/25

Question 20

Area of rectangle = 20 × 10 = 200 m^2.

Radius of semicircle = 10 ÷ 2 = 5 m. Area of semicircle = ½ × 3.14 × 5^2 = ½ × 3.14 × 25 = 39.25 m^2.

Total area = 200 + 39.25 = 239.25 m^2.

Answer: 239.25 m^2