

**Interest**

**Name** .....

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| <p>1. Write the formula for simple interest</p> <p>2. Use the formula to find I when <math>P = \\$500</math>, <math>R = 8\%</math> p.a. and <math>T = 6</math> years</p> <p>3. Use the formula to find T when <math>P = \\$4000</math>, <math>R = 5\%</math> and <math>I = \\$1800</math></p> <p>4. If I invest \$800 for 5 years at 4.5% simple interest, how much interest will I get?</p> <p>5. I borrow \$2000 and pay it back after <math>2\frac{1}{2}</math> years. If the simple interest rate is 12% p.a., how much would I have to pay back (including principal and interest)</p> <p>6. I can invest money in the Rain Depression Bank for 4 years at 7% p.a. simple interest. How much should I invest if I want to get \$800 interest?</p> | <p>7. Write the formula for compound interest</p> <p>8. Use the formula to find the amount I would have at the end if I invested \$750 for 8 years compounding annually at 11% p.a.</p> <p>9. Rupert borrowed some money from the Mafia and paid it back with interest 8 years later. They charged him 30% p.a. compounding yearly. If he had to pay back \$14 756, how much did he borrow?</p> <p>10. If Stumples invested \$3000 at 8% p.a. interest compounding monthly, how much would he have in the bank after 5 years.</p> <p>11. Which is better, 8% p.a. interest compounding yearly or 7.5% compounding monthly?</p> |
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Name .....

### Revision Sheet 1 – Interest

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| <p>1. Find the simple interest on \$4000 borrowed for 6 years at 8% p.a. interest. [\$1920]</p> <p>2. How much would I have to invest at 6% p.a. simple interest to get \$300 interest in 10 years? [\$500]</p> <p>3. How long would it take \$2000 to increase to \$2400 at 4% p.a. simple interest? [5 y]</p> <p>4. I invested \$500 for 4 years and got \$60 interest. What was the simple interest rate? [3%]</p> | <p>5. If I invest \$50 000 at 8% p.a. compound interest, how much would I have after 15 years? [\$158 608.46]</p> <p>6. How much would I have to invest at 10% p.a. compound interest to end up with \$4500 after 10 years? [\$1734.95]</p> <p>7. I borrowed \$300 000 to buy a house. The interest rate was 7.5% p.a. compounding monthly. If I paid it off 24 months later, how much would I have to pay? [\$348 387.60]</p> |
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**Challenge:** I invested \$8000 at 5.75% interest compounding quarterly. My mother also invested \$8000, but at simple interest. At the end of 8½ years, we had both received the same amount of interest. What interest rate did my mother get? [7.35%] Show working on back of sheet.

Name .....

## Revision Sheet 2 – Integer Indices and Scientific Notation

8. Write out the 8 laws for integer indices

9. Evaluate the following without a calculator:

- a.  $2^6$
- b.  $5^1$
- c.  $9^0$
- d.  $3^{-2}$
- e.  $(-2)^4$
- f.  $-2^4$
- g.  $-3^{-3}$

10. Simplify the following where possible:

- a.  $a^3 \times a^5$
- b.  $v^3 + v^6$
- c.  $c^7 \div c^2$
- d.  $c^3 \div c^{10}$
- e.  $w^{-4} \times w^{-6}$
- f.  $h^2 \div h^{-5}$
- g.  $(h^3)^4$
- h.  $(s^3t)^5$

11. Simplify the following leaving no negative powers

a.  $\frac{d^3 f^{-2}}{d^4 f^0}$

b.  $\left(\frac{r^2 g}{r^5 g^0}\right)^4$

12. Express in decimal notation:

- a.  $4 \times 10^5$
- b.  $2.6 \times 10^3$
- c.  $1.05 \times 10^{-4}$
- d.  $5.4962 \times 10^2$

13. Express in scientific notation

- a. 500 000
- b. 347 000 000
- c. 0.000 002
- d. 0.0436
- e. 145 billion
- f. 6.7 million

### Challenge

There are about  $8 \times 10^{23}$  protons in 1 gram of matter. The Earth has a mass of about  $5 \times 10^{21}$  tonnes. The Earth's core makes up about a quarter the mass of the Earth. Roughly how many protons are there in the Earth's core? Show full working and give the answer in scientific notation.

Show working and answer on back of sheet.



**Fractions of numbers**

Name .....

1. What is  $\frac{1}{2}$  of 302. What is  $\frac{1}{5}$  of \$403. What is  $\frac{3}{5}$  of \$404. Find  $\frac{3}{7}$  of 565. Find  $1\frac{1}{7}$  of 566. Find  $1\frac{4}{7}$  of 56

7. Find 23% of \$420

8. Find 160% of \$60

9. Find 17.5% of 200 kg

10. Find 6.7% of 35.6 L

11. Find 3.6 lots of 20

12. Find 0.28 of 65 kg

13. Find 0.004 of 2000

14. Add 20% to \$35

15. Take 45% off \$80

16. A pair of shoes is marked down 30% from \$90. What will they cost now?

17. Daphne has to pay \$180 for a truck load of gravel plus 15% extra for delivery. What will she pay in total?

18. A shop tried to sell a candle for \$25. It didn't sell, so they marked it down 20%. It still didn't sell, so they marked the reduced price down by another 20%. What was the price then?

19. Jock weighed 80 kg, but then got fit and reduced his weight by 10%.  
By how many kg did his weight drop?

20. What was his weight drop as a common fraction of his original weight?

21. What was this as a percentage of his original weight?

22. What was his new weight as a percentage of his original weight?

## Proportion and rates

Name .....

1. If Eddie typed 60 words in 2 minutes, at what rate did he type in words per minute?

2. Dravinia walks at 5 km/h. How far can she walk in 3 hours?

3. Stella drives at 150 km/h. How long will it take her to drive 650 km?

4. Smith bought 17 tubas for \$3009. What was the price per tuba?

5. 16 people go for a hike. They need 5.5 kg of supplies per person. How much will they need altogether?

6. It costs \$2225 per year to support an orphan. How many orphans can be supported with \$300 000 per year?

7. The cost of a bunch of bananas is proportional to its mass, i.e.  $c = km$ , where  $c$  is the cost,  $m$  is the mass and  $k$  is the constant of proportionality. If 5 kg cost \$17.50, find the value of  $k$ .

Hence find the cost of a 14 kg bunch

And find the mass of a bunch that costs \$22.10

8. If 4 people need 7.2 m<sup>3</sup> of air to survive for a day, how much will 11 people need?

9. If it takes 12 cleaners 5 hours to clean a school, how long would it take for 8 cleaners to do the job?

## Proportion and rates

Name .....

1. If Josie typed 200 words in 25 minutes, at what rate did she type in words per minute?

2. Crabby jogs at 8 km/h. How far can she jog in  $3\frac{1}{2}$  hours?

3. Mary drives at 40 km/h. How long will it take her to drive 220 km?

4. Jones bought 320 kg of soap powder for \$464. What was the price per kilogram?

5. 16 people go to Mars. They need 923 kg of supplies per person. How much will they need altogether?

6. It costs \$147 per day to employ a bouncer. How many bouncers can be employed if you have \$22 000 to last 14 days?

7. The number of hours it takes to bag a cubic metre of gravel is inversely proportional to the number of people doing it, i.e.  $h = k/p$  where  $h$  is the number of hours,  $p$  is the number of people and  $k$  is a constant. If it takes 4 people 5 hours, find the value of  $k$ .

Hence find the number of hours 3 people would take.

And find the number of people needed to do it in 40 minutes.

8. If it takes 12 cleaners 5 hours to clean a school, how long would it take for 8 cleaners to do the job?