Name:

Exam Style Questions

Estimation

Corbettmaths

Equipment needed: Pen, Pencil

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

Video Tutorial

www.corbettmaths.com/contents

Video 215

Answers and Video Solutions

1. By rounding each number to the nearest 10, estimate the value of 39×21

39×21

$\approx 40 \times 20 = 800$

800

(3)

2. Estimate 2.9×401

$\approx 3 \times 400$

1200

(2)

3. Work out an estimate for the value of 7.1×97

$\approx 7 \times 100$

700

(2)

4. Estimate the value of $\dfrac{908}{2.03}$

$\approx \dfrac{900}{2}$

450

(2)

5. Isla uses her mobile phone while abroad.

She received 3 minutes of calls at 88p per minute.
She made 7 minutes of calls at 71p per minute.
She sent 4 text messages at 52p per message.

Estimate the total cost of Isla using her mobile phone while abroad.

$3 \times 90 = 270$

$7 \times 70 = 490$

$4 \times 50 = 200$

$$\begin{array}{r} 270 \\ 490 \\ +\ 200 \\ \hline 960 \end{array}$$

£9.60

(3)

6. Stuart buys 72 packets of crisps at 19p each.
Estimate the total cost.

$\approx 70 \times 20 = 1400_p$

£14

(2)

7. By rounding each number to the nearest 10, estimate the value of $\frac{82 \times 48}{198}$

$\approx \frac{80 \times 50}{200}$

$= \frac{4000}{200}$

20

(2)

8. Work out an estimate for

$$\frac{58.8 \times 20.9}{101.4}$$

$\approx \frac{60 \times 20}{100}$

$= \frac{1200}{100}$

12

(3)

9. Estimate the total cost of 31 televisions at £196.50 each and 19 DVD players at £50.99 each.

Show clearly how you obtained your answer.

$\approx (30 \times 200) + (20 \times 50)$

$= 6000 + 1000$

$= 7000$

£7000

(3)

10. Jack was asked to work out $\dfrac{88.78 - 19.44}{9.84}$

His answer is 10.99

By rounding each number to the nearest 10, show that his answer is incorrect.

$\approx \dfrac{90 - 20}{10}$

$= \dfrac{70}{10} = 7$

10.99 is clearly incorrect.

(3)

11. Estimate

$$\frac{31 \times 398}{61}$$

Show clearly how you obtained your answer.

$\approx \dfrac{30 \times 400}{60}$

$= \dfrac{12000}{60}$

$60 \overline{)12000} = 00200$

200

(3)

12. Estimate the value of $9.03 + 19.87 \times 3.11 - 4.97$

You must show your working.

remember order of operations

$\approx 9 + 20 \times 3 - 5$

$= 9 + 60 - 5$

$= 69 - 5$

$= 64$

64

(3)

13. Work out an estimate for

$$\frac{31.1 \times 19.4}{3.98 \times 5.04}$$

$\approx \frac{30 \times 20}{4 \times 5}$

$= \frac{600}{20}$

$= 30$

30

(3)

14. Estimate the value of

$$\frac{702.1 + 299.3}{1.9 \times 5.1}$$

$\approx \frac{700 + 300}{2 \times 5}$

$= \frac{1000}{10}$

$= 100$

100

(3)

15. A merchandise stall sell

49 bubble wands for $29.75 each
196 pins for $9.95 each

(a) Work out an estimate for the total money paid for the items.

$\approx (50 \times 30) + (200 \times 10)$

$= 1500 + 2000$

$= \$3500$

$\$3500$

(3)

(b) Is your answer to (a) an underestimate or an overestimate?
Explain your answer.

An overestimate as I have rounded both the prices and number of items sold up.

(1)

16. 1.97 litres of water flows from a tap every 15 seconds.

Estimate how many litres will flow from the tap in one hour.

$\approx$ 2 litres every 15 seconds.

$8 \times 60 = 480$

4 litres every 30 seconds

8 litres every minute.

480 litres every hour

480 litres

(2)

17. Circle the number that is closest to the value of 20.2^3

400 800 (8000) 60

$\approx 20 \times 20 \times 20$

$= 8000$

(1)

18. Work out an estimate for

$$\frac{20.2 \times 698.1}{19.8 \times 5.3}$$

$\approx \frac{20 \times 700}{20 \times 5}$

$= \frac{14000}{100}$

$= 140$

140

(3)

19. Estimate the answer to

$$\frac{8.7 \times 20.3}{8.898 - 6.01}$$

$\approx \frac{9 \times 20}{9 - 6}$

$= \frac{180}{3}$

$= 60$

60

(3)

≈ 30 ≈ 30

20. In a theatre there are 29 rows and in each row there are 32 seats.
Each ticket costs £19.75 ≈ £20

Work out an estimate for the total income from ticket sales.

≈ 30 × 30 = 900

900 × 20 = 18000

£ 18000

(3)

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21. Estimate how many books costing $7.05 can be bought for $424

≈ 420 ÷ 7

= 60

or 400 ÷ 7 = 57.14..

57

60 or 57

(2)

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22. By writing each number correct to 1 significant figure, use estimation to show that

$$\frac{60.4 \times 19.7}{\sqrt[3]{7.96}} \approx 600$$

$$\approx \frac{60 \times 20}{\sqrt[3]{8}}$$

$$= \frac{1200}{2} = 600 \checkmark$$

(3)

23. Work out an estimate for

$$\frac{203 \times 9.93}{0.511}$$

$\approx \frac{200 \times 10}{0.5}$

$= \frac{2000}{0.5}$

$= 4000$

4000

(3)

24. Alasdair is estimating the value of 60.4×91.18

He rounds each number to 1 significant figure.

(a) Work out Alasdair's estimate.

$\approx 60 \times 90 = 5400$

5400

(2)

Alasdair says his estimate is an overestimate.

(b) Is Alasdair correct?
Explain your answer.

No, as he has rounded both numbers down, he has obtained an underestimate.

(1)

25. Use approximations to estimate the value of

$$\frac{4.02^2 + \sqrt{102}}{0.51}$$

$\approx \frac{4^2 + \sqrt{100}}{0.5}$

$= \frac{16 + 10}{0.5}$

$= \frac{26}{0.5}$

$= 52$

52

.....

(3)

26. Use approximations to estimate the value of

$$\frac{4.12 \times 1.89}{0.21}$$

$\approx \frac{4 \times 2}{0.2}$

$= \frac{8 \times 5}{0.2 \times 5} = \frac{40}{1}$

$= 40$

40

.....

(3)

27. Work out an estimate for

$$\frac{(5.14)^2}{0.398}$$

$\approx \frac{5^2}{0.4}$

$= \frac{25}{0.4}$

$= \frac{250}{4}$

62.5

(3)

28. Work out an estimate for

$$\frac{4.086 \times 2.992}{0.192}$$

$\approx \frac{4 \times 3}{0.2}$

$= \frac{12}{0.2}$

$= \frac{120}{2}$

$= 60$

60

(3)

29. Use approximations to estimate the value of

$$\frac{596.4 \times 2.06}{0.521}$$

$\approx \frac{600 \times 2}{0.5}$

$= \frac{1200}{0.5}$ $\times 2$ $\times 2$

$= \frac{2400}{1}$

2400

(3)

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30. Write down an estimate for $\sqrt{20}$

$\sqrt{16} = 4$

$\sqrt{25} = 5$

4.5

(1)

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31. Write down an estimate for $\sqrt{51}$

$\sqrt{49} = 7$

$\sqrt{64} = 8$

7.1

(1)

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32. Write down an estimate for $\sqrt{78}$

$\sqrt{64} = 8$

$\sqrt{81} = 9$

8.9

(1)

33. Write down an estimate for $\sqrt[3]{30}$

$\sqrt[3]{27} = 3$

$\sqrt[3]{64} = 4$

3.1

.....

(1)

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34. Circle the number that is closest to the value to $\frac{79.7}{0.0206}$

$\approx \frac{80}{0.02}$

$\frac{800}{0.2}$

$\frac{8000}{2} = 4000$

40000 (4000) 400 40

(1)

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35. Estimate

$$\frac{594 \times 4.03}{0.396}$$

$\approx \frac{600 \times 4}{0.4}$

$= \frac{2400}{0.4}$

$= \frac{24000}{4}$

$= 6000$

6000

.....

(3)

36. Use approximations to estimate the value of

$$\sqrt{\frac{50.77}{0.513}}$$

You must show your working.

$\approx \sqrt{\frac{50}{0.5}}$

$= \sqrt{100}$

$= 10$

10

.....

(3)

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37. Estimate the value of

$$\frac{803 \times 2.97}{0.613}$$

$\approx \frac{800 \times 3}{0.6}$

$= \frac{2400}{0.6}$

$= \frac{24000}{6}$

$= 4000$

$6\overline{)24000} = 04000$

4000

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(3)