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PAPER F2

管理会计

MANAGEMENT ACCOUNTING

BPP Learning Media 著

FOR EXAMS IN JUNE AND DECEMBER 2010



华中科技大学出版社

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In this edition approved by ACCA

- We discuss the **best strategies** for studying for ACCA exams
- We **highlight** the **most important elements** in the syllabus and the **key skills** you will need
- We **signpost** how each chapter links to the syllabus and the study guide
- We **provide** lots of **exam focus points** demonstrating what the examiner will want you to do
- We **emphasise** **key points** in regular **fast forward** summaries
- We **test your knowledge** of what you've studied
- We **examine your understanding** in our **exam** questions
- We **reference** all the **important topics** in our **full index**

BPP's i-Learn and i-Pass products also support this paper.

FOR EXAMS IN JUNE AND DECEMBER 2010



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F2 管理会计 F2 Management Accounting

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BPP Learning Media 作为一家职业考试资料的出版商，在市场上一直独占鳌头。从 1977 年开始，我们就出版了很多高质量关于会计、营销和金融服务资格方面的产品。BPP 是全球 150 多个国家的学生、培训提供商、公司和专业机构的最佳选择。

BPP Learning Media 是 ACCA 的官方出版社。这项与 ACCA 的伙伴关系确保了，在出卷考官的审订下，我们的教材正确的程度上涵盖了考纲并且符合了考试的要求。这项合作也允许我们在练习册内发布新近的考卷内容，包括考官的答案与评分。您可以信赖 BPP Learning Media 的产品，它们包含最新信息且关注重点，传递给您来自 BPP 作者和讲师们的专业知识和丰富经验。

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- 清算会计
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- 金融营销和市场调查
- 银行业 IT
- 金融英语

F2（课本）简介

本课本讲述有关基本成本和商业决策所需的定量信息知识，并增进学员对于这些课题的理解。我们的课本设计注重大纲中最重要的方面，包括：

- 成本与管理会计的性质和目的
- 成本分类、性态和目的
- 商业数学和电子数据表
- 成本会计技术
- 短期商业决策技术

F2 课本经由考官审核，并根据考官的关于考试中如何考察知识点指导，在内容上注重大纲中的重要部分。课本逐步探讨知识点，并提供大量习题供学员练习计算。为了学员便于复习相应知识，课本还用整章篇幅详述电子数据表，同时搭配基础数学附录。

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F1 会计师与企业

F2 Management Accounting

F2 管理会计

F3 Financial Accounting (INT)

F3 财务会计 (INT)

Skills Module

技能课程

F4 Corporate and Business Law (UK)

F4 公司法与商法 (UK)

F4 Corporate and Business Law (China)

F4 公司法与商法 (中国版)

F5 Performance Management

F5 业绩管理

F6 Taxation (UK)

F6 税务 (UK)

F6 Taxation (China)

F6 税务 (中国版)

F7 Financial Reporting (INT)

F7 财务报告 (INT)

F8 Audit and Assurance (INT)

F8 审计与认证业务 (INT)

F9 Financial Management

F9 财务管理

专业阶段课程

Essentials Module

核心课程

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P1 专业会计师

P2 Corporate Reporting (INT)

P2 公司报告 (INT)

P3 Business Analysis

P3 商务分析

Options Module

选修课程

P4 Advanced Financial Management

P4 高级财务管理

P5 Advanced Performance Management

P5 高级业绩管理

P6 Advanced Taxation (UK)

P6 高级税务 (UK)

P6 Advanced Taxation (China)

P6 高级税务 (中国版)

P7 Advanced Audit and Assurance (INT)

P7 高级审计与认证业务 (INT)

How the BPP ACCA-approved Study Text can help you pass – AND help you with your Practical Experience Requirement!

NEW FEATURE – the PER alert!

Before you can qualify as an ACCA member, you do not only have to pass all your exams but also fulfil a three year **practical experience requirement** (PER). To help you to recognise areas of the syllabus that you might be able to apply in the workplace to achieve different performance objectives, we have introduced the '**PER alert**' feature. You will find this feature throughout the Study Text to remind you that what you are **learning to pass** your ACCA exams is **equally useful to the fulfilment of the PER requirement**.

Tackling studying

Studying can be a daunting prospect, particularly when you have lots of other commitments. The **different features** of the text, the **purposes** of which are explained fully on the **Chapter features** page, will help you whilst studying and improve your chances of **exam success**.

Developing exam awareness

Our Texts are completely **focused** on helping you pass your exam.

Our advice on **Studying F2** outlines the **content** of the paper, the **necessary skills** the examiner expects you to demonstrate and any **brought forward knowledge** you are expected to have.

Exam focus points are included within the chapters to provide information about skills that you will need in the exam and reminders of important points within the specific subject areas.

Using the Syllabus and Study Guide

You can find the syllabus, Study Guide and other useful resources for F2 on the ACCA web site:
www.accaglobal.com/students/study_exams/qualifications/acca_choose/acca/fundamentals/ma

The Study Text covers **all aspects** of the syllabus to ensure you are as fully prepared for the exam as possible.

Testing what you can do

Testing yourself helps you develop the skills you need to pass the exam and also confirms that you can recall what you have learnt.

We include **Exam-style Questions** – lots of them - both within chapters and in the **Exam Question Bank**, as well as **Quick Quizzes** at the end of each chapter to test your knowledge of the chapter content.

Chapter features

Each chapter contains a number of helpful features to guide you through each topic.

Topic list

Topic list	Syllabus reference

Tells you what you will be studying in this chapter and the relevant section numbers, together with the ACCA syllabus references.

Introduction

Puts the chapter content in the context of the syllabus as a whole.

Study Guide

Links the chapter content with ACCA guidance.

Exam Guide

Highlights how examinable the chapter content is likely to be and the ways in which it could be examined.

FAST FORWARD

Summarises the content of main chapter headings, allowing you to preview and review each section easily.

Examples

Demonstrate how to apply key knowledge and techniques.

Key terms

Definitions of important concepts that can often earn you easy marks in exams.

Exam focus points

Provide information about skills you will need in the exam and reminders of important points within the specific subject area.

Formula to learn

Formulae that are not given in the exam but which have to be learnt.



This is a new feature that gives you a useful indication of syllabus areas that closely relate to performance objectives in your PER.



Question

Give you essential practice of techniques covered in the chapter.



Case Study

Provide real world examples of theories and techniques.

Chapter Roundup

A full list of the Fast Forwards included in the chapter, providing an easy source of review.

Quick Quiz

A quick test of your knowledge of the main topics in the chapter.

Exam Question Bank

Found at the back of the Study Text with more comprehensive chapter questions.

Studying F2

This paper introduces you to costing and management accounting techniques, including those techniques that are used to make and support decisions. It provides a basis for Paper F5 – *Performance Management*.

The examiner for this paper is **David Forster** who was previously the examiner for Paper 1.2 under the previous syllabus. His aims are to test your knowledge of basic costing and management accounting techniques and also to test basic application of knowledge.

1 What F2 is about

F2 is one of the three papers that form the **Knowledge** base for your ACCA studies. Whilst Paper F1 – *Accountant in Business* gives you a broad overview of the role and function of the accountant, Papers F2 – *Management Accounting* and F3 – *Financial Accounting* give you technical knowledge at a fundamental level of the two major areas of accounting. Paper F2 will give you a good grounding in all the basic techniques you need to know in order to progress through the ACCA qualification and will help you with Papers F5 – *Performance Management* and P5 – *Advanced Performance Management* in particular.

2 What skills are required?

The paper is examined by computer-based exam or a written exam consisting of objective test questions (mainly multiple-choice questions). You are not required, at this level, to demonstrate any written skills. However you will be required to demonstrate the following.

- **Core knowledge** – classification and treatment of costs, accounting for overheads, budgeting and standard costing, decision-making.
- **Numerical and mathematical skills** – regression analysis, linear programming.
- **Spreadsheet skills** – the paper will test your understanding of what can be done with spreadsheets. This section will be particularly useful to you in the workplace.

3 How to improve your chances of passing

You must bear the following points in mind.

- All questions in the paper are compulsory. This means that you cannot avoid studying any part of the syllabus. The examiner can examine any part of the syllabus and you must be prepared for him to do so.
- The best preparation for any exam is to practise lots of questions. Work your way through the **Quick Quizzes** at the end of each chapter in this Study Text and then attempt the questions in the **Exam Question Bank**. You should also make full use of the **BPP Practice and Revision Kit**.
- In the exam, **read the questions carefully**. Beware any question that looks like one you have seen before – it is probably different in some way that you haven't spotted.
- If you really cannot answer something, move on. You can always come back to it.
- If at the end of the exam you find you have not answered all of the questions, have a guess. You are not penalised for getting a question wrong and there is a chance you may have guessed correctly. If you fail to choose an answer, you have no chance of getting any marks.

The exam paper

Format of the paper

Guidance

The exam is a two hour paper that can be taken either as a paper-based or computer-based exam.

There are 50 questions in the paper – 40 questions will be worth two marks each whilst the remaining 10 questions are worth one mark each. There are therefore 90 marks available.

The two mark questions will have a choice of four possible answers (A/B/C/D) whilst the one mark questions will have a choice of two (A/B) or three possible answers (A/B/C). The one and two mark questions will be interspersed and questions will appear in random order (that is, not in Study Guide order). Questions on the same topic will not necessarily be grouped together.

Questions will be a mix of calculation and non-calculation questions in a similar mix to the pilot paper. The pilot paper can be found on the ACCA web site:

www.accaglobal.com/students/study_exams/qualifications/acca_choose/acca/fundamentals/ma/past_papers.

The examiner has indicated that the pilot paper is an extremely useful guide to the mix of questions that you might expect to find in the 'real' exams. You should therefore study the pilot paper carefully to get an idea of the weighting that each syllabus area will be given in the exam.

Exam formulae sheet

You will be given an exam formulae sheet in your exam. This is reproduced below, together with the chapters of the Study Text in which you can find the formulae.

Regression analysis

(Chapter 4 of Study Text)

$$a = \frac{\sum Y}{n} - \frac{b \sum x}{n}$$

$$b = \frac{n \sum xy - \sum x \sum y}{n \sum x^2 - (\sum x)^2}$$

$$r = \frac{n \sum xy - \sum x \sum y}{\sqrt{(n \sum x^2 - (\sum x)^2)(n \sum y^2 - (\sum y)^2)}}$$

Economic order quantity

(Chapter 6 of Study Text)

$$\sqrt{\frac{2C_0D}{C_h}}$$

Economic batch quantity

(Chapter 6 of Study Text)

$$\sqrt{\frac{2C_0D}{C_h(1 - \frac{D}{R})}}$$

Before you begin ... Are you
confident with basic maths?

only for use by
classroom training or
university library

1 Using this introductory chapter

The Paper F2 – *Management Accounting* syllabus assumes that you have some knowledge of basic mathematics and statistics. The purpose of this introductory chapter is to provide the knowledge required in this area if you haven't studied it before, or to provide a means of reminding you of basic maths and statistics if you are feeling a little rusty in one or two areas!

Accordingly, this introductory chapter sets out from first principles a good deal of the knowledge that you are assumed to possess in the main chapters of the Study Text. You may wish to work right through it now. You may prefer to dip into it as and when you need to. You may just like to try a few questions to sharpen up your knowledge. Don't feel obliged to learn everything in the following pages: they are intended as an extra resource to be used in whatever way best suits you.

2 Integers, fractions and decimals

2.1 Integers, fractions and decimals

An **integer** is a whole number and can be either positive or negative. The integers are therefore as follows.

....., -5, -4, -3, -2, -1, 0, 1, 2, 3, 4, 5.....

Fractions (such as $\frac{1}{2}$, $\frac{1}{4}$, $\frac{19}{35}$, $\frac{101}{377}$,) and **decimals** (0.1, 0.25, 0.3135) are both ways of showing parts of a whole. Fractions can be turned into decimals by dividing the numerator by the denominator (in other words, the top line by the bottom line). To turn decimals into fractions, all you have to do is remember that places after the decimal point stand for tenths, hundredths, thousandths and so on.

2.2 Significant digits

Sometimes a decimal number has too many digits in it for practical use. This problem can be overcome by rounding the decimal number to a specific number of **significant digits** by discarding digits using the following rule.

If the first digit to be discarded is greater than or equal to five then add one to the previous digit. Otherwise the previous digit is unchanged.

2.3 Example: Significant digits

- (a) 187.392 correct to five significant digits is 187.39
Discarding a 2 causes nothing to be added to the 9.
- (b) 187.392 correct to four significant digits is 187.4
Discarding the 9 causes one to be added to the 3.
- (c) 187.392 correct to three significant digits is 187
Discarding a 3 causes nothing to be added to the 7.



Question

Significant digits

What is 17.385 correct to four significant digits?

Answer

17.39

3 Mathematical notation

3.1 Brackets

Brackets are commonly used to indicate which parts of a mathematical expression should be grouped together, and calculated before other parts. In other words, brackets can indicate a priority, or an order in which calculations should be made. The rule is as follows.

- (a) Do things in brackets before doing things outside them.
- (b) Subject to rule (a), do things in this order.
 - (i) Powers and roots
 - (ii) Multiplications and divisions, working from left to right
 - (iii) Additions and subtractions, working from left to right

Thus brackets are used for the sake of **clarity**. Here are some examples.

- (a) $3 + 6 \times 8 = 51$. This is the same as writing $3 + (6 \times 8) = 51$.
- (b) $(3 + 6) \times 8 = 72$. The brackets indicate that we wish to multiply the sum of 3 and 6 by 8.
- (c) $12 - 4 \div 2 = 10$. This is the same as writing $12 - (4 \div 2) = 10$ or $12 - (4/2) = 10$.
- (d) $(12 - 4) \div 2 = 4$. The brackets tell us to do the subtraction first.

A figure outside a bracket may be multiplied by two or more figures inside a bracket, linked by addition or subtraction signs. Here is an example.

$$5(6 + 8) = 5 \times (6 + 8) = 5 \times 6 + 5 \times 8 = 70$$

This is the same as $5(14) = 5 \times 14 = 70$

The multiplication sign after the 5 can be omitted, as shown here $(5(6 + 8))$, but there is no harm in putting it in $(5 \times (6 + 8))$ if you want to.

Similarly:

$$5(8 - 6) = 5(2) = 10; \text{ or } \\ 5 \times 8 - 5 \times 6 = 10$$

When two sets of figures linked by addition or subtraction signs within brackets are multiplied together, each figure in one bracket is multiplied in turn by every figure in the second bracket. Thus:

$$(8 + 4)(7 + 2) = (12)(9) = 108 \text{ or } \\ 8 \times 7 + 8 \times 2 + 4 \times 7 + 4 \times 2 = \\ 56 + 16 + 28 + 8 = 108$$

3.2 Negative numbers

When a negative number ($-p$) is added to another number (q), the net effect is to subtract p from q .

- (a) $10 + (-6) = 10 - 6 = 4$
- (b) $-10 + (-6) = -10 - 6 = -16$

When a negative number ($-p$) is subtracted from another number (q), the net effect is to add p to q .

- (a) $12 - (-8) = 12 + 8 = 20$
- (b) $-12 - (-8) = -12 + 8 = -4$

When a negative number is multiplied or divided by another negative number, the result is a positive number.

$$-8 \times (-4) = +32 \\ -18 / (-3) = +6$$

If there is only one negative number in a multiplication or division, the result is negative.

$$\begin{aligned}-8 \times 4 &= -32 \\ 3 \times (-2) &= -6 \\ 12/(-4) &= -3 \\ -20/5 &= -4\end{aligned}$$



Question

Negative numbers

Work out the following.

- (a) $(72 - 8) - (-3 + 1)$
- (b) $\frac{88 + 8}{12} + \frac{(29 - 11)}{-2}$
- (c) $8(2 - 5) - (4 - (-8))$
- (d) $\frac{-36}{9 - 3} \quad \frac{84}{3 - 10} \quad \frac{-81}{3}$

Answer

- (a) $64 - (-2) = 64 + 2 = 66$
- (b) $8 + (-9) = -1$
- (c) $-24 - (12) = -36$
- (d) $-6 - (-12) - (-27) = -6 + 12 + 27 = 33$

3.3 Reciprocals

The **reciprocal** of a number is just 1 divided by that number. For example, the reciprocal of 2 is 1 divided by 2, ie $\frac{1}{2}$.

3.4 Extra symbols

You will come across several mathematical signs in this book and there are six which you should learn right away.

- (a) $>$ means 'greater than'. So $46 > 29$ is true, but $40 > 86$ is false.
- (b) \geq means 'is greater than or equal to'. So $4 \geq 3$ and $4 \geq 4$.
- (c) $<$ means 'is less than'. So $29 < 46$ is true, but $86 < 40$ is false.
- (d) \leq means 'is less than or equal to'. So $7 \leq 8$ and $7 \leq 7$.
- (e) \neq means 'is not equal to'. So we could write $100.004 \neq 100$.
- (f) Σ means 'the sum of'.

4 Percentages and ratios

4.1 Percentages and ratios

Percentages are used to indicate the **relative size** or **proportion** of items, rather than their absolute size. For example, if one office employs ten accountants, six secretaries and four supervisors, the **absolute** values of staff numbers and the **percentage** of the total work force in each type would be as follows.

	Accountants	Secretaries	Supervisors	Total
Absolute numbers	10	6	4	20
Percentages	50%	30%	20%	100%

The idea of percentages is that the whole of something can be thought of as 100%. The whole of a cake, for example, is 100%. If you share it out equally with a friend, you will get half each, or $\frac{100\%}{2} = 50\%$ each.

To turn a percentage into a fraction or decimal you divide by 100. To turn a fraction or decimal back into a percentage you multiply by 100%. Consider the following.

- (a) $0.16 = 0.16 \times 100\% = 16\%$
- (b) $\frac{4}{5} = \frac{4}{5} \times 100\% = \frac{400}{5}\% = 80\%$
- (c) $40\% = \frac{40}{100} = \frac{2}{5} = 0.4$

There are two main types of situations involving percentages.

- (a) You may be required to calculate a percentage of a figure, having been given the percentage.

Question: What is 40% of \$64?

Answer: 40% of \$64 = $0.4 \times \$64 = \25.60 .

- (b) You may be required to state what percentage one figure is of another, so that you have to work out the percentage yourself.

Question: What is \$16 as a percentage of \$64?

Answer: \$16 as a percentage of \$64 = $\frac{16}{64} \times 100\% = \frac{1}{4} \times 100\% = 25\%$

In other words, put the \$16 as a fraction of the \$64, and then multiply by 100%.

4.2 Proportions

A **proportion** means writing a percentage as a proportion of 1 (that is, as a decimal).

100% can be thought of as the whole, or 1. 50% is half of that, or 0.5. Consider the following.

Question: There are 14 women in an audience of 70. What proportion of the audience are men?

Answer: Number of men = $70 - 14 = 56$

Proportion of men = $\frac{56}{70} = \frac{8}{10} = 80\% = 0.8$

- (a) $\frac{8}{10}$ or $\frac{4}{5}$ is the **fraction** of the audience made up by men.
- (b) 80% is the **percentage** of the audience made up by men.
- (c) 0.8 is the **proportion** of the audience made up by men.

4.3 Ratios

Suppose Tom has \$12 and Dick has \$8. The **ratio** of Tom's cash to Dick's cash is 12:8. This can be cancelled down, just like a fraction, to 3:2.

Usually an examination question will pose the problem the other way around: Tom and Dick wish to share \$20 out in the ratio 3:2. How much will each receive?

Because $3 + 2 = 5$, we must divide the whole up into five equal parts, then give Tom three parts and Dick two parts.

- (a) $\$20 \div 5 = \4 (so each part is \$4)
- (b) Tom's share = $3 \times \$4 = \12
- (c) Dick's share = $2 \times \$4 = \8
- (d) **Check:** $\$12 + \$8 = \$20$ (adding up the two shares in the answer gets us back to the \$20 in the question).

This method of calculating ratios as amounts works no matter how many ratios are involved. Here is another example.

Question: A, B, C and D wish to share \$600 in the ratio 6:1:2:3. How much will each receive?

- Answer:**
- (a) Number of parts = $6 + 1 + 2 + 3 = 12$.
- (b) Value of each part = $\$600 \div 12 = \50
- (c) A: $6 \times \$50 = \300
 B: $1 \times \$50 = \50
 C: $2 \times \$50 = \100
 D: $3 \times \$50 = \150
- (d) Check: $\$300 + \$50 + \$100 + \$150 = \$600$.



Question

Ratios

- (a) Peter and Paul wish to share \$60 in the ratio 7 : 5. How much will each receive?
- (b) Bill and Ben own 300 and 180 flower pots respectively. What is the ratio of Ben's pots: Bill's pots?
- (c) Tom, Dick and Harry wish to share out \$800. Calculate how much each would receive if the ratio used was:
- (i) 3 : 2 : 5;
 (ii) 5 : 3 : 2;
 (iii) 3 : 1 : 1.
- (d) Lynn and Laura share out a certain sum of money in the ratio 4 : 5, and Laura ends up with \$6.
- (i) How much was shared out in the first place?
- (ii) How much would have been shared out if Laura had got \$6 and the ratio had been 5 : 4 instead of 4 : 5?

Answer

- (a) There are $7 + 5 = 12$ parts
 Each part is worth $\$60 \div 12 = \5
 Peter receives $7 \times \$5 = \35
 Paul receives $5 \times \$5 = \25
- (b) Ben's pots: Bill's pots = $180 : 300 = 3 : 5$
- (c) (i) Total parts = 10
 Each part is worth $\$800 \div 10 = \80
 Tom gets $3 \times \$80 = \240
 Dick gets $2 \times \$80 = \160
 Harry gets $5 \times \$80 = \400
- (ii) Same parts as (i) but in a different order.
 Tom gets \$400
 Dick gets \$240
 Harry gets \$160
- (iii) Total parts = 5
 Each part is worth $\$800 \div 5 = \160
 Therefore Tom gets \$480
 Dick and Harry each get \$160
- (d) (i) Laura's share = \$6 = 5 parts
 Therefore one part is worth $\$6 \div 5 = \1.20
 Total of 9 parts shared out originally
 Therefore total was $9 \times \$1.20 = \10.80
- (ii) Laura's share = \$6 = 4 parts
 Therefore one part is worth $\$6 \div 4 = \1.50
 Therefore original total was $9 \times \$1.50 = \13.50

5 Roots and powers

5.1 Square roots

The square root of a number is a value which, when multiplied by itself, equals the original number.

$$\sqrt{9} = 3, \text{ since } 3 \times 3 = 9$$

Similarly, the cube root of a number is the value which, when multiplied by itself twice, equals the original number.

$$\sqrt[3]{64} = 4, \text{ since } 4 \times 4 \times 4 = 64$$

The n th root of a number is a value which, when multiplied by itself $(n - 1)$ times, equals the original number.

5.2 Powers

Powers work the other way round.

Thus the 6th power of $2 = 2^6 = 2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$.

Similarly, $3^4 = 3 \times 3 \times 3 \times 3 = 81$.

Since $\sqrt{9} = 3$, it also follows that $3^2 = 9$, and since $\sqrt[3]{64} = 4$, $4^3 = 64$.

When a number with an index (a 'to the power of' value) is multiplied by the *same* number with the same or a different index, the result is that number to the power of the sum of the indices.

$$(a) \quad 5^2 \times 5 = 5^2 \times 5^1 = 5^{(2+1)} = 5^3 = 125$$

$$(b) \quad 4^3 \times 4^3 = 4^{(3+3)} = 4^6 = 4,096$$

Similarly, when a number with an index is divided by the *same* number with the same or a different index, the result is that number to the power of the first index minus the second index.

$$(a) \quad 6^4 \div 6^3 = 6^{(4-3)} = 6^1 = 6$$

$$(b) \quad 7^8 \div 7^6 = 7^{(8-6)} = 7^2 = 49$$

Any figure to the power of zero equals one. $1^0 = 1$, $2^0 = 1$, $3^0 = 1$, $4^0 = 1$ and so on.

$$\text{Similarly, } 8^2 \div 8^2 = 8^{(2-2)} = 8^0 = 1$$

An index can be a fraction, as in $16^{\frac{1}{2}}$. What $16^{\frac{1}{2}}$ means is the square root of 16 ($\sqrt{16}$ or 4). If we multiply $16^{\frac{1}{2}}$ by $16^{\frac{1}{2}}$ we get $16^{(\frac{1}{2}+\frac{1}{2})}$ which equals 16^1 and thus 16.

Similarly, $216^{\frac{1}{3}}$ is the cube root of 216 (which is 6) because $216^{\frac{1}{3}} \times 216^{\frac{1}{3}} \times 216^{\frac{1}{3}} = 216^{(\frac{1}{3}+\frac{1}{3}+\frac{1}{3})} = 216^1 = 216$.

An index can be a negative value. The negative sign represents a reciprocal. Thus 2^{-1} is the reciprocal of, or one over, 2^1

$$= \frac{1}{2^1} = \frac{1}{2}$$

5.3 Example: Roots and powers

$$(a) \quad 2^{-2} = \frac{1}{2^2} = \frac{1}{4} \text{ and } 2^{-3} = \frac{1}{2^3} = \frac{1}{8}$$

$$(b) \quad 5^{-6} = \frac{1}{5^6} = \frac{1}{15,625}$$